



SEQUENCE LISTING

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<110> Mount, David B.
Delpire, Eric
Gamba, Gerardo
Alfred L. George, Jr.

<120> PURIFIED AND ISOLATED POTASSIUM-CHLORIDE COTRANSPORTER NUCLEIC ACIDS
AND POLYPEPTIDES AND THERAPEUTIC AND SCREENING METHODS USING SAME

<130> Attorney Docket No. 1242-26-2

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<170> PatentIn Ver. 2.1

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<213> Homo sapiens

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Glu Gly Pro Glu Pro Glu Arg Pro Ser Pro Gly Asp Gly Asn Pro Arg
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 Phe Glu Gly Lys Asn Met Ala Leu Phe Glu Glu Glu Met Asp Ser Asn
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 Pro Met Val Ser Ser Leu Xaa Asn Lys Leu Ala Asn Tyr Thr Asn Leu
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 Ile Val Gly Val Ala Gly Val Leu Glu Ser Phe Leu Ile Val Ala Met
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 Cys Cys Thr Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala Ile Ala
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 Thr Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Tyr Met Ile Ser Arg
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Sub
 B1
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 Tyr Val Asn Lys Leu Ala Leu Val Phe Leu Ala Cys Val Val Leu Ser
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 Ile Leu Ala Ile Tyr Ala Gly Val Ile Lys Ser Ala Phe Asp Pro Pro
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gac atc ccg gtc tgc ctc ctg ggg aac cgc acg ctg tca ccg cgc agc 961
 Asp Ile Pro Val Cys Leu Leu Gly Asn Arg Thr Leu Ser Arg Arg Ser
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ttc gat gcc tgc gtc aag gcc tac ggc atc cac aac aac tca gcc acc 1009
 Phe Asp Ala Cys Val Lys Ala Tyr Gly Ile His Asn Asn Ser Ala Thr
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 Cys Asp Glu Tyr Phe Ile Gln Asn Asn Val Thr Glu Ile Gln Gly Ile
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 Val Ala Glu Glu Ser Arg Ala Ser Thr Leu Pro Tyr Val Leu Thr Asp
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 Ile Ala Ala Ser Phe Thr Leu Leu Val Gly Ile Tyr Phe Pro Ser Val
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 Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp Ala
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 Gln Lys Ser Ile Pro Thr Gly Thr Ile Leu Ala Ile Val Thr Thr Ser
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 Phe Ile Tyr Leu Ser Cys Ile Val Leu Phe Gly Ala Cys Ile Glu Gly
 465 470 475

gtg gtc tta cga gat aag ttc ggg gag gcc ctg cag ggg aac ctg gtc 1489
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 480 485 490 495

Sub
 B1

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| ttc ttc tcc acc tgc ggt gcc ggc ctg cag acc ctc acg ggg gca cgc | 1585 |
| Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Thr Leu Thr Gly Ala Pro | |
| 515 520 525 | |
| cgc cta ctg cag gcc att gcc cgt gac ggc atc gtc ccc ttc ctg cag | 1633 |
| Arg Leu Leu Gln Ala Ile Ala Arg Asp Gly Ile Val Pro Phe Leu Gln | |
| 530 535 540 | |
| gtg ttt ggc cac ggg aag gcc aac ggg gag ccc acg tgg gcg ctg ctg | 1681 |
| Val Phe Gly His Gly Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu | |
| 545 550 555 | |
| ctg aca gtc ctc atc tgc gag act ggc atc ctc atc gcc tct ctg gac | 1729 |
| Leu Thr Val Leu Ile Cys Glu Thr Gly Ile Leu Ile Ala Ser Leu Asp | |
| 560 565 570 575 | |
| agc gtg gcc cgc atc ctc tcc atg ttc ttc ctc atg tgc tac ctg ttc | 1777 |
| Ser Val Ala Pro Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu Phe | |
| 580 585 590 | |
| gtg aac ctg gcc tgc gcc gtg cag acc ctg cta cgt acc ccc aac tgg | 1825 |
| Val Asn Leu Ala Cys Ala Val Gln Thr Leu Leu Arg Thr Pro Asn Trp | |
| 595 600 605 | |
| cgt cca cgc ttc aag ttc tac cac tgg acc ctg tcc ttt ctg ggt atg | 1873 |
| Arg Pro Arg Phe Lys Phe Tyr His Trp Thr Leu Ser Phe Leu Gly Met | |
| 610 615 620 | |
| agc ctg tgc ctg gcg ctg atg ttc atc tgc tcc tgg tac tac gcg ctg | 1921 |
| Ser Leu Cys Leu Ala Leu Met Phe Ile Cys Ser Trp Tyr Tyr Ala Leu | |
| 625 630 635 | |
| tcc gcc atg ctc atc gct ggc tgc atc tac aag tac atc gag tac cgc | 1969 |
| Ser Ala Met Leu Ile Ala Gly Cys Ile Tyr Lys Tyr Ile Glu Tyr Arg | |
| 640 645 650 655 | |
| ggg gcc gag aag gag tgg ggc gat ggc atc cgt ggc cta tcc ctg aac | 2017 |
| Gly Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Asn | |
| 660 665 670 | |
| gcc gcc cgc tac gcc ctg ctg cgc gtg gag cac ggt ccc ccc cac acc | 2065 |
| Ala Ala Arg Tyr Ala Leu Leu Arg Val Glu His Gly Pro Pro His Thr | |
| 675 680 685 | |
| aag aac tgg agg ccc cag gtg ctg gtg atg ctg aac ctg gac gcg gag | 2113 |
| Lys Asn Trp Arg Pro Gln Val Leu Val Met Leu Asn Leu Asp Ala Glu | |
| 690 695 700 | |
| cag gcc gtg aag cac ccc cgc ctg ctg tcc ttc acg tcg cag ctg aag | 2161 |
| Gln Ala Val Lys His Pro Arg Leu Leu Ser Phe Thr Ser Gln Leu Lys | |
| 705 710 715 | |

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| ctg Leu | gac Asp | aag Lys | cac His | atg Met | gag Glu | gct Ala | cag Gln | cgg Arg | gcc Ala | gag Glu | gag Glu | aac Asn | ata Ile | cgg Arg | tcc Ser | 2257 |
| cta Leu | atg Met | agc Ser | aca Thr | gag Glu | aag Lys | acc Thr | aag Lys | ggc Gly | ttc Phe | tgc Cys | cag Gln | ctg Leu | gtg Val | gtc Val | tcg Ser | 2305 |
| tcc Ser | agc Ser | ctg Leu | cgg Arg | gat Asp | ggc Gly | atg Met | tcc Ser | cac His | ctg Leu | atc Ile | cag Gln | tcg Ser | gcc Ala | ggc Gly | ctg Leu | 2353 |
| ggc Gly | ggc Gly | ctg Leu | aag Lys | cac His | aac Asn | acg Thr | gtg Val | ctc Leu | atg Met | gcc Ala | tgg Trp | ccc Pro | gca Ala | tcc Ser | tgg Trp | 2401 |
| aag Lys | cag Gln | gag Glu | gac Asp | aac Asn | ccc Pro | ttc Phe | tcc Ser | tgg Trp | aag Lys | aac Asn | ttt Phe | gta Val | gac Asp | acc Thr | gtc Val | 2449 |
| cgc Arg | gac Asp | acc Thr | acc Thr | gcc Ala | gcg Ala | cac His | cag Gln | gct Ala | ctg Leu | ctg Leu | gtg Val | gcc Ala | aag Lys | aac Asn | gtc Val | 2497 |
| gac Asp | tcg Ser | ttt Phe | ccg Pro | caa Gln | aac Asn | cag Gln | gag Glu | cgc Arg | ttc Phe | ggc Gly | ggg Gly | ggc Gly | cac His | atc Ile | gac Asp | 2545 |
| gtg Val | tgg Trp | tgg Trp | atc Ile | gtg Val | cac His | gac Asp | ggc Gly | ggc Gly | atg Met | ctc Leu | atg Met | ctg Leu | ctg Leu | ccc Pro | ttc Phe | 2593 |
| ctg Leu | ctg Leu | cgc Arg | cag Gln | cac His | aag Lys | gtg Val | tgg Trp | agg Arg | aag Lys | tgc Cys | cgg Arg | atg Met | cgt Arg | atc Ile | ttc Phe | 2641 |
| acc Thr | gtg Val | gcc Ala | cag Gln | gtg Val | gac Asp | gac Asp | aac Asn | agc Ser | atc Ile | cag Gln | atg Met | aag Lys | aag Lys | gac Asp | ctg Leu | 2689 |
| cag Gln | atg Met | ttc Phe | ttg Leu | tat Tyr | cac His | ttg Leu | cgc Arg | atc Ile | agc Ser | gcc Ala | gag Glu | gtg Val | gag Glu | gtg Val | gtg Val | 2737 |
| gag Glu | atg Met | gtt Val | gaa Glu | aac Asn | gac Asp | ata Ile | tct Ser | gct Ala | ttc Phe | acc Thr | tac Tyr | gag Glu | agg Arg | aca Thr | cta Leu | 2785 |
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| tcc cac acc gcg gcg gca gcc agg acc caa gcg ccg cct acg cca gac | 2929 |
| Ser His Thr Ala Ala Ala Ala Arg Thr Gln Ala Pro Pro Thr Pro Asp | |
| 960 965 970 975 | |
| aag gtg cag atg acc tgg acc agg gag aag ctg atc gct gag aag tac | 2977 |
| Lys Val Gln Met Thr Trp Thr Arg Glu Lys Leu Ile Ala Glu Lys Tyr | |
| 980 985 990 | |
| agg agc aga gac acc agc cta tcc ggt ttc aaa gac ctc ttc agc atg | 3025 |
| Arg Ser Arg Asp Thr Ser Leu Ser Gly Phe Lys Asp Leu Phe Ser Met | |
| 995 1000 1005 | |
| aag ccg gac cag tcc aac gtc agg cgg atg cac acg gct gtg aag ctc | 3073 |
| Lys Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val Lys Leu | |
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| Asn Gly Val Val Xaa Asn Lys Ser Gln Asp Ala Gln Leu Val Leu Leu | |
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| aac atg cca ggt cct ccc aaa aac cgg cag gga gac gag aac tac atg | 3169 |
| Asn Met Pro Gly Pro Pro Lys Asn Arg Gln Gly Asp Glu Asn Tyr Met | |
| 1040 1045 1050 1055 | |
| gag ttt ctt gaa gtc ctg acc gag ggg ctg aac aga gtc ctc ctg gtc | 3217 |
| Glu Phe Leu Glu Val Leu Thr Glu Gly Leu Asn Arg Val Leu Leu Val | |
| 1060 1065 1070 | |
| agg ggt ggc ggc cgg gag gtg atc acc atc tac tcc taatgccccaa | 3263 |
| Arg Gly Gly Gly Arg Glu Val Ile Thr Ile Tyr Ser | |
| 1075 1080 | |
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| 1 | | | | 5 | | | | | 10 | | | | | 15 | | |
| Gly | Gly | Asp | Glu | Thr | Ala | Glu | Arg | Thr | Glu | Ala | Pro | Gly | Thr | Pro | Glu | |
| | | 20 | | | | | 25 | | | | | | 30 | | | |
| Gly | Pro | Glu | Pro | Glu | Arg | Pro | Ser | Pro | Gly | Asp | Gly | Asn | Pro | Arg | Glu | |
| | | 35 | | | | | 40 | | | | | 45 | | | | |
| Asn | Ser | Pro | Phe | Xaa | Asn | Asn | Val | Glu | Val | Glu | Gln | Glu | Ser | Phe | Phe | |
| | 50 | | | | | 55 | | | | | 60 | | | | | |
| Glu | Gly | Lys | Asn | Met | Ala | Leu | Phe | Glu | Glu | Glu | Met | Asp | Ser | Asn | Pro | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | |
| Met | Val | Ser | Ser | Leu | Xaa | Asn | Lys | Leu | Ala | Asn | Tyr | Thr | Asn | Leu | Ser | |
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| Gln | Gly | Val | Val | Glu | His | Glu | Glu | Asp | Glu | Glu | Ser | Arg | Arg | Arg | Glu | |
| | | 100 | | | | | | 105 | | | | | 110 | | | |
| Ala | Lys | Ala | Pro | Arg | Met | Gly | Thr | Phe | Ile | Gly | Val | Tyr | Leu | Pro | Cys | |
| | | 115 | | | | | 120 | | | | | 125 | | | | |
| Leu | Gln | Asn | Ile | Leu | Gly | Val | Ile | Leu | Phe | Leu | Arg | Leu | Thr | Trp | Ile | |
| | 130 | | | | | 135 | | | | | 140 | | | | | |
| Val | Gly | Val | Ala | Gly | Val | Leu | Glu | Ser | Phe | Leu | Ile | Val | Ala | Met | Cys | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| Cys | Thr | Cys | Thr | Met | Leu | Thr | Ala | Ile | Ser | Met | Ser | Ala | Ile | Ala | Thr | |
| | | | | 165 | | | | | 170 | | | | | 175 | | |
| Asn | Gly | Val | Val | Pro | Ala | Gly | Gly | Ser | Tyr | Tyr | Met | Ile | Ser | Arg | Ser | |
| | | 180 | | | | | | 185 | | | | | 190 | | | |
| Leu | Gly | Pro | Glu | Phe | Gly | Gly | Ala | Val | Gly | Leu | Cys | Phe | Tyr | Leu | Gly | |
| | | 195 | | | | | 200 | | | | | 205 | | | | |
| Thr | Thr | Phe | Ala | Gly | Ala | Met | Tyr | Ile | Leu | Gly | Thr | Ile | Glu | Ile | Phe | |
| | 210 | | | | | 215 | | | | | 220 | | | | | |
| Leu | Thr | Tyr | Ile | Ser | Pro | Gly | Ala | Ala | Ile | Phe | Gln | Ala | Glu | Ala | Ala | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | |

| | | | |
|-----------------------------------------------------------------|-----|-----|-----|
| Gly Gly Glu Ala Ala Ala Met Leu His Asn Met Arg Val Tyr Gly Thr | 245 | 250 | 255 |
| Cys Thr Leu Val Leu Met Ala Leu Val Val Phe Val Gly Val Lys Tyr | 260 | 265 | 270 |
| Val Asn Lys Leu Ala Leu Val Phe Leu Ala Cys Val Val Leu Ser Ile | 275 | 280 | 285 |
| Leu Ala Ile Tyr Ala Gly Val Ile Lys Ser Ala Phe Asp Pro Pro Asp | 290 | 295 | 300 |
| Ile Pro Val Cys Leu Leu Gly Asn Arg Thr Leu Ser Arg Arg Ser Phe | 305 | 310 | 315 |
| Asp Ala Cys Val Lys Ala Tyr Gly Ile His Asn Asn Ser Ala Thr Ser | 325 | 330 | 335 |
| Ala Leu Trp Gly Leu Phe Cys Asn Gly Ser Gln Pro Ser Ala Ala Cys | 340 | 345 | 350 |
| Asp Glu Tyr Phe Ile Gln Asn Asn Val Thr Glu Ile Gln Gly Ile Pro | 355 | 360 | 365 |
| Gly Ala Ala Ser Gly Val Phe Leu Glu Asn Leu Trp Ser Thr Tyr Ala | 370 | 375 | 380 |
| His Ala Gly Ala Phe Val Glu Lys Lys Gly Val Pro Ser Val Pro Val | 385 | 390 | 395 |
| Ala Glu Glu Ser Arg Ala Ser Thr Leu Pro Tyr Val Leu Thr Asp Ile | 405 | 410 | 415 |
| Ala Ala Ser Phe Thr Leu Leu Val Gly Ile Tyr Phe Pro Ser Val Thr | 420 | 425 | 430 |
| Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp Ala Gln | 435 | 440 | 445 |
| Lys Ser Ile Pro Thr Gly Thr Ile Leu Ala Ile Val Thr Thr Ser Phe | 450 | 455 | 460 |
| Ile Tyr Leu Ser Cys Ile Val Leu Phe Gly Ala Cys Ile Glu Gly Val | 465 | 470 | 475 |
| Val Leu Arg Asp Lys Phe Gly Glu Ala Leu Gln Gly Asn Leu Val Ile | 485 | 490 | 495 |
| Gly Met Leu Ala Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser Phe | 500 | 505 | 510 |
| Phe Ser Thr Cys Gly Ala Gly Leu Gln Thr Leu Thr Gly Ala Pro Arg | 515 | 520 | 525 |
| Leu Leu Gln Ala Ile Ala Arg Asp Gly Ile Val Pro Phe Leu Gln Val | 530 | 535 | 540 |

Phe Gly His Gly Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu Leu
 545 550 555 560

Thr Val Leu Ile Cys Glu Thr Gly Ile Leu Ile Ala Ser Leu Asp Ser
 565 570 575

Val Ala Pro Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu Phe Val
 580 585 590

Asn Leu Ala Cys Ala Val Gln Thr Leu Leu Arg Thr Pro Asn Trp Arg
 595 600 605

Pro Arg Phe Lys Phe Tyr His Trp Thr Leu Ser Phe Leu Gly Met Ser
 610 615 620

Leu Cys Leu Ala Leu Met Phe Ile Cys Ser Trp Tyr Tyr Ala Leu Ser
 625 630 635 640

Ala Met Leu Ile Ala Gly Cys Ile Tyr Lys Tyr Ile Glu Tyr Arg Gly
 645 650 655

Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Asn Ala
 660 665 670

Ala Arg Tyr Ala Leu Leu Arg Val Glu His Gly Pro Pro His Thr Lys
 675 680 685

Asn Trp Arg Pro Gln Val Leu Val Met Leu Asn Leu Asp Ala Glu Gln
 690 695 700

Ala Val Lys His Pro Arg Leu Leu Ser Phe Thr Ser Gln Leu Lys Ala
 705 710 715 720

Gly Lys Gly Leu Thr Ile Val Gly Ser Val Leu Glu Gly Thr Tyr Leu
 725 730 735

Asp Lys His Met Glu Ala Gln Arg Ala Glu Glu Asn Ile Arg Ser Leu
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Met Ser Thr Glu Lys Thr Lys Gly Phe Cys Gln Leu Val Val Ser Ser
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Ser Leu Arg Asp Gly Met Ser His Leu Ile Gln Ser Ala Gly Leu Gly
 770 775 780

Gly Leu Lys His Asn Thr Val Leu Met Ala Trp Pro Ala Ser Trp Lys
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Gln Glu Asp Asn Pro Phe Ser Trp Lys Asn Phe Val Asp Thr Val Arg
 805 810 815

Asp Thr Thr Ala Ala His Gln Ala Leu Leu Val Ala Lys Asn Val Asp
 820 825 830

Ser Phe Pro Gln Asn Gln Glu Arg Phe Gly Gly Gly His Ile Asp Val
 835 840 845

Trp Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu
 850 855 860
 Leu Arg Gln His Lys Val Trp Arg Lys Cys Arg Met Arg Ile Phe Thr
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 Val Ala Gln Val Asp Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Gln
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 Met Phe Leu Tyr His Leu Arg Ile Ser Ala Glu Val Glu Val Val Glu
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 Met Val Glu Asn Asp Ile Ser Ala Phe Thr Tyr Glu Arg Thr Leu Met
 915 920 925
 Met Glu Gln Arg Ser Gln Met Leu Lys Gln Met Gln Leu Ser Lys Asn
 930 935 940
 Glu Gln Glu Arg Glu Ala Gln Leu Ile His Asp Arg Asn Thr Ala Ser
 945 950 955 960
 His Thr Ala Ala Ala Ala Arg Thr Gln Ala Pro Pro Thr Pro Asp Lys
 965 970 975
 Val Gln Met Thr Trp Thr Arg Glu Lys Leu Ile Ala Glu Lys Tyr Arg
 980 985 990
 Ser Arg Asp Thr Ser Leu Ser Gly Phe Lys Asp Leu Phe Ser Met Lys
 995 1000 1005
 Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val Lys Leu Asn
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 Gly Val Val Xaa Asn Lys Ser Gln Asp Ala Gln Leu Val Leu Leu Asn
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 Met Pro Gly Pro Pro Lys Asn Arg Gln Gly Asp Glu Asn Tyr Met Glu
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tttgcgaggt tccccccact ttttttgttc ttaaaaagaa caaa atg cat cct cca 176
Met His Pro Pro
1

gaa acc acc acc aag atg gct tca gtt cgg ttc atg gtg aca ccg aca 224
Glu Thr Thr Thr Lys Met Ala Ser Val Arg Phe Met Val Thr Pro Thr
5 10 15 20

aag atc gat gac att cca ggt ttg tca gac acc agt ccg gac ntc agc 272
Lys Ile Asp Asp Ile Pro Gly Leu Ser Asp Thr Ser Pro Asp Xaa Ser
25 30 35

tct cga tct agt tcc cga gta aga ttt agc tcc cgg gaa agc gtg cct 320
Ser Arg Ser Ser Ser Arg Val Arg Phe Ser Ser Arg Glu Ser Val Pro
40 45 50

gaa aca agc cgg agt gag cct atg agt gag atg tct ggg gcc acc act 368
Glu Thr Ser Arg Ser Glu Pro Met Ser Glu Met Ser Gly Ala Thr Thr
55 60 65

tcg ctg gca act gtt gca ctg gat cca ccc agt gac cgg act tct cac 416
Ser Leu Ala Thr Val Ala Leu Asp Pro Pro Ser Asp Arg Thr Ser His
70 75 80

ccc cag gat gtc atc gag gac gac gga cat aag aaa gct cga aat gct 464
Pro Gln Asp Val Ile Glu Asp Asp Gly His Lys Lys Ala Arg Asn Ala
85 90 95 100

tat ctc aat aat tcc aat tat gaa gaa gga gat gaa tat ttt gat aaa 512
Tyr Leu Asn Asn Ser Asn Tyr Glu Glu Gly Asp Glu Tyr Phe Asp Lys
105 110 115

aat ttg gca ctc ttt gag gaa gaa atg gac acc aga ccg aag gtg tct 560
Asn Leu Ala Leu Phe Glu Glu Glu Met Asp Thr Arg Pro Lys Val Ser
120 125 130

tcc ctc ctc aac cgc atg gcc aat tac act aat ctg act caa gga gca 608
Ser Leu Leu Asn Arg Met Ala Asn Tyr Thr Asn Leu Thr Gln Gly Ala
135 140 145

| | |
|-----------------------------------------------------------------|------|
| aag gaa cat gaa gag gca gaa aac atc act gaa ggg aaa aag aag ccc | 656 |
| Lys Glu His Glu Glu Ala Glu Asn Ile Thr Glu Gly Lys Lys Lys Pro | |
| 150 155 160 | |
| acc aag acc ccc caa atg ggt acc ttc atg ggt gtc tac ctc cca tgt | 704 |
| Thr Lys Thr Pro Gln Met Gly Thr Phe Met Gly Val Tyr Leu Pro Cys | |
| 165 170 175 180 | |
| cta caa aat att ttt gga gtg atc ctt ttt tta cgc ctt aca tgg gtg | 752 |
| Leu Gln Asn Ile Phe Gly Val Ile Leu Phe Leu Arg Leu Thr Trp Val | |
| 185 190 195 | |
| gtg ggc aca gct gga gtt ctt cag gct ttt gca att gtc ctt atc tgc | 800 |
| Val Gly Thr Ala Gly Val Leu Gln Ala Phe Ala Ile Val Leu Ile Cys | |
| 200 205 210 | |
| tgc tgc tgt aca atg ttg act gct atc tcc atg agt gcc att gcc act | 848 |
| Cys Cys Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala Ile Ala Thr | |
| 215 220 225 | |
| aat gga gtg gtg cca gct ggg ggc tca tac ttt atg att tcc cgg gca | 896 |
| Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Phe Met Ile Ser Arg Ala | |
| 230 235 240 | |
| ctg ggc cca gag ttt ggt ggg gct gtt ggc ctc tgc ttt tat ctt ggt | 944 |
| Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys Phe Tyr Leu Gly | |
| 245 250 255 260 | |
| acc aca ttt gca gca gcc atg tac atc ctt ggt gcc att gaa atc ttt | 992 |
| Thr Thr Phe Ala Ala Ala Met Tyr Ile Leu Gly Ala Ile Glu Ile Phe | |
| 265 270 275 | |
| ctg gtc tat atc gtc ccc cga gct gcc atc ttt cac agt gat gac gca | 1040 |
| Leu Val Tyr Ile Val Pro Arg Ala Ala Ile Phe His Ser Asp Asp Ala | |
| 280 285 290 | |
| ctc aag gaa tca gca gcc atg cta aat aac atg cgt gtc tac ggc aca | 1088 |
| Leu Lys Glu Ser Ala Ala Met Leu Asn Asn Met Arg Val Tyr Gly Thr | |
| 295 300 305 | |
| gct ttc ttg gtc ctt atg gta tta gtg gta ttt atc ggc gta cgc tat | 1136 |
| Ala Phe Leu Val Leu Met Val Leu Val Val Phe Ile Gly Val Arg Tyr | |
| 310 315 320 | |
| gtg aac aag ttt gcc tca ctt ttc ctg gcc tgt gtc att gtg tcc atc | 1184 |
| Val Asn Lys Phe Ala Ser Leu Phe Leu Ala Cys Val Ile Val Ser Ile | |
| 325 330 335 340 | |
| ttg gcc atc tat gct gga gcc atc aag tct tct ttt gct cct cca cac | 1232 |
| Leu Ala Ile Tyr Ala Gly Ala Ile Lys Ser Ser Phe Ala Pro Pro His | |
| 345 350 355 | |
| ttc ccg gtc tgc atg ctg ggt aac cgc act ctt tca tca aga cac att | 1280 |
| Phe Pro Val Cys Met Leu Gly Asn Arg Thr Leu Ser Ser Arg His Ile | |
| 360 365 370 | |

| | |
|-----------------------------------------------------------------|------|
| gac gtt tgc tct aag acc aag gaa att aac aac atg aca gtc cca tca | 1328 |
| Asp Val Cys Ser Lys Thr Lys Glu Ile Asn Asn Met Thr Val Pro Ser | |
| 375 380 385 | |
| aag tta tgg gga ttc ttc tgt aac tcg agt caa ttt ttc aat gcc acc | 1376 |
| Lys Leu Trp Gly Phe Phe Cys Asn Ser Ser Gln Phe Phe Asn Ala Thr | |
| 390 395 400 | |
| tgt gat gaa tac ttt gtt cac aat aac gtc act tca atc cag ggc att | 1424 |
| Cys Asp Glu Tyr Phe Val His Asn Asn Val Thr Ser Ile Gln Gly Ile | |
| 405 410 415 420 | |
| cct gga ttg gct agt ggt ata att aca gag aat ctt tgg agt aat tac | 1472 |
| Pro Gly Leu Ala Ser Gly Ile Ile Thr Glu Asn Leu Trp Ser Asn Tyr | |
| 425 430 435 | |
| cta ccc aag gga gag atc atc gaa aag cct tca gcc aaa tct tct gat | 1520 |
| Leu Pro Lys Gly Glu Ile Ile Glu Lys Pro Ser Ala Lys Ser Ser Asp | |
| 440 445 450 | |
| gtc tta ggc agc tta aac cat gaa tat gtt ctt gtt gac atc acc acc | 1568 |
| Val Leu Gly Ser Leu Asn His Glu Tyr Val Leu Val Asp Ile Thr Thr | |
| 455 460 465 | |
| tcc ttc acg ntt ctg gtg gga atc ttc ttt ccc tct gtt aca ggt atc | 1616 |
| Ser Phe Thr Xaa Leu Val Gly Ile Phe Phe Pro Ser Val Thr Gly Ile | |
| 470 475 480 | |
| atg gct gga tca aac aga tct gga gat ctg aaa gat gct cag aag tct | 1664 |
| Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp Ala Gln Lys Ser | |
| 485 490 495 500 | |
| att ccg att ggt act atc ctt gcc atc ctg acc acc tcc ttt gtt tat | 1712 |
| Ile Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr Thr Ser Phe Val Tyr | |
| 505 510 515 | |
| tta agc aat gtt gtc ctt ttt ggt gca tgt att gaa ggg gtt gtt ctc | 1760 |
| Leu Ser Asn Val Val Leu Phe Gly Ala Cys Ile Glu Gly Val Val Leu | |
| 520 525 530 | |
| aga gac aag ttc ggt gat gct gtg aaa ggt aat ttg gtg gta ggc acc | 1808 |
| Arg Asp Lys Phe Gly Asp Ala Val Lys Gly Asn Leu Val Val Gly Thr | |
| 535 540 545 | |
| tta tct tgg cca tcc cca tgg gtg att gtt att ggc tcc ttc ttt tca | 1856 |
| Leu Ser Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser Phe Phe Ser | |
| 550 555 560 | |
| aca tgt ggg gct gga ctt cag agc ctc aca ggt gca ccg agg ctg cta | 1904 |
| Thr Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala Pro Arg Leu Leu | |
| 565 570 575 580 | |
| caa gct att gcc aag gat aac atc ata ccg ttt ctg agg gtt ttt ggc | 1952 |
| Gln Ala Ile Ala Lys Asp Asn Ile Ile Pro Phe Leu Arg Val Phe Gly | |
| 585 590 595 | |

| | |
|-----------------------------------------------------------------|------|
| cac agc aaa gcc aat ggg gaa cct acc tgg gct tta ctt cta act gct | 2000 |
| His Ser Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu Leu Thr Ala | |
| 600 605 610 | |
| gcc att gca gag ctt gga ata ctc att gcc tcc ctg gat ctt gtg gcc | 2048 |
| Ala Ile Ala Glu Leu Gly Ile Leu Ile Ala Ser Leu Asp Leu Val Ala | |
| 615 620 625 | |
| cca att ctt tcc atg ttt ttt ctc atg tgt tac ctc ttt gta aac ttg | 2096 |
| Pro Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu Phe Val Asn Leu | |
| 630 635 640 | |
| gca tgt gcc ttg caa aca tta ctt cga aca ccc aac tgg aga ccc cga | 2144 |
| Ala Cys Ala Leu Gln Thr Leu Leu Arg Thr Pro Asn Trp Arg Pro Arg | |
| 645 650 655 660 | |
| ttc cgc tac tac cat tgg gcc ctt tct ttc atg gga atg agt atc tgt | 2192 |
| Phe Arg Tyr Tyr His Trp Ala Leu Ser Phe Met Gly Met Ser Ile Cys | |
| 665 670 675 | |
| ctg gct ctg atg ttc att tct tcc tgg tat tat gcc att gta gcc atg | 2240 |
| Leu Ala Leu Met Phe Ile Ser Ser Trp Tyr Tyr Ala Ile Val Ala Met | |
| 680 685 690 | |
| gta ata gct ggt atg atc tac aag tac att gaa tac caa gga gct gag | 2288 |
| Val Ile Ala Gly Met Ile Tyr Lys Tyr Ile Glu Tyr Gln Gly Ala Glu | |
| 695 700 705 | |
| aaa gaa tgg ggt gat ggt atc cgt ggg ctg tcc ctc agt gca gcc cgg | 2336 |
| Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser Ala Ala Arg | |
| 710 715 720 | |
| ttt gct ttg ctt cga ttg gag gaa gga cct cca cac act aaa aac tgg | 2384 |
| Phe Ala Leu Leu Arg Leu Glu Glu Gly Pro Pro His Thr Lys Asn Trp | |
| 725 730 735 740 | |
| agg cct cag ttg ctt gta tta ctg aaa cta gat gaa gac tta cat gtc | 2432 |
| Arg Pro Gln Leu Leu Val Leu Leu Lys Leu Asp Glu Asp Leu His Val | |
| 745 750 755 | |
| aag cat cct cgc ctc ctc acc ttt gcc tca cag ctc aaa gca gga aaa | 2480 |
| Lys His Pro Arg Leu Leu Thr Phe Ala Ser Gln Leu Lys Ala Gly Lys | |
| 760 765 770 | |
| ggt ctc act att gtg ggc tct gtc atc gtg ggg aac ttc cta gag aac | 2528 |
| Gly Leu Thr Ile Val Gly Ser Val Ile Val Gly Asn Phe Leu Glu Asn | |
| 775 780 785 | |
| tac ggt gaa gct tta gct gct gag cag acc ata aag cac cta atg gag | 2576 |
| Tyr Gly Glu Ala Leu Ala Ala Glu Gln Thr Ile Lys His Leu Met Glu | |
| 790 795 800 | |
| gca gag aag gta aaa gga ttc tgc cag ctg gtg gtg gcc gcc aag ctg | 2624 |
| Ala Glu Lys Val Lys Gly Phe Cys Gln Leu Val Val Ala Ala Lys Leu | |
| 805 810 815 820 | |

| | |
|-----------------------------------------------------------------|------|
| aga gag ggc att tcc cac ctc atc cag tca tgt ggc ctt ggg ggc atg | 2672 |
| Arg Glu Gly Ile Ser His Leu Ile Gln Ser Cys Gly Leu Gly Gly Met | |
| 825 830 835 | |
| aag cac aac acg gtg gtg atg ggc tgg cct aat ggc tgg cgt caa agc | 2720 |
| Lys His Asn Thr Val Val Met Gly Trp Pro Asn Gly Trp Arg Gln Ser | |
| 840 845 850 | |
| gaa gat gcc cgc gct tgg aag act ttt att ggc aca gtt cga gtg aca | 2768 |
| Glu Asp Ala Arg Ala Trp Lys Thr Phe Ile Gly Thr Val Arg Val Thr | |
| 855 860 865 | |
| act gct gcc cat ctt gca ctg ctg gtg gct aaa aac atc tcc ttc ttt | 2816 |
| Thr Ala Ala His Leu Ala Leu Leu Val Ala Lys Asn Ile Ser Phe Phe | |
| 870 875 880 | |
| ccc agc aat gtg gag caa ttt tct gag ggc aac att gat gtg tgg tgg | 2864 |
| Pro Ser Asn Val Glu Gln Phe Ser Glu Gly Asn Ile Asp Val Trp Trp | |
| 885 890 895 900 | |
| att gtg cat gat ggg ggg atg ctt atg cta cta cca ttc cta ctg aaa | 2912 |
| Ile Val His Asp Gly Met Leu Met Leu Leu Pro Phe Leu Leu Lys | |
| 905 910 915 | |
| cag cac aag gtg tgg cga aag tgc agc ata cgg atc ttc aca gta gcc | 2960 |
| Gln His Lys Val Trp Arg Lys Cys Ser Ile Arg Ile Phe Thr Val Ala | |
| 920 925 930 | |
| caa tta gaa gac aac agt atc caa atg aag aag gac cta gcc acc ttc | 3008 |
| Gln Leu Glu Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Ala Thr Phe | |
| 935 940 945 | |
| cta tat cac tta cgc att gag gcg gag gta gaa gtg gtg gag atg cat | 3056 |
| Leu Tyr His Leu Arg Ile Glu Ala Glu Val Glu Val Val Glu Met His | |
| 950 955 960 | |
| gac agt gat ata tca gca tat act tac gag cgc act ttg atg atg gaa | 3104 |
| Asp Ser Asp Ile Ser Ala Tyr Thr Tyr Glu Arg Thr Leu Met Met Glu | |
| 965 970 975 980 | |
| caa agg tcc cag atg ctt cgg cac atg cgg cta tcc aaa aca gag cga | 3152 |
| Gln Arg Ser Gln Met Leu Arg His Met Arg Leu Ser Lys Thr Glu Arg | |
| 985 990 995 | |
| gac aga gag gca caa ttg gtg aaa gac cga aac tca atg cta cga ttg | 3200 |
| Asp Arg Glu Ala Gln Leu Val Lys Asp Arg Asn Ser Met Leu Arg Leu | |
| 1000 1005 1010 | |
| acc agc att ggc tct gat gag gac gaa gag aca gaa acc tat cag gag | 3248 |
| Thr Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr Glu Thr Tyr Gln Glu | |
| 1015 1020 1025 | |
| aag gtg cac atg act tgg aca aaa gac aag tac atg gca tcc cgg gga | 3296 |
| Lys Val His Met Thr Trp Thr Lys Asp Lys Tyr Met Ala Ser Arg Gly | |
| 1030 1035 1040 | |

caa aaa gcg aag tca atg gaa gga ttc cag gac ctg ctt aac atg cgt 3344
 Gln Lys Ala Lys Ser Met Glu Gly Phe Gln Asp Leu Leu Asn Met Arg
 1045 1050 1055 1060

 ccg gac cag tcc aat gtg agg cgg atg cat aca gca gtg aaa ntc aac 3392
 Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val Lys Xaa Asn
 1065 1070 1075

 gag gtt ata gtt aac aag tcc cat gaa gca aag ctg gtt tta ttg aat 3440
 Glu Val Ile Val Asn Lys Ser His Glu Ala Lys Leu Val Leu Leu Asn
 1080 1085 1090

 atg cca ggg cca ccc cga aac cct gag ggt gat gaa aac tac atg gag 3488
 Met Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp Glu Asn Tyr Met Glu
 1095 1100 1105

 ttc cta gag gtg ctt acc gag gga cta gag cga gtc cta ctt gtc cgg 3536
 Phe Leu Glu Val Leu Thr Glu Gly Leu Glu Arg Val Leu Leu Val Arg
 1110 1115 1120

 ggt ggt ggc agt gaa gtg atc acc att tat tca taacctactc tgaatgaccg 3589
 Gly Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser
 1125 1130 1135

 tgcttgacct gttttcttaa aaggcctacg tcctccatgg aagtgccagc tcattactac 3649
 cactcccact caactagaag cctgtgttct gtacacatca tactgaactc ttgatgagct 3709
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 aatttatggt caagtatatt tggacctatt atcctcggca agccaagatg caaacatttt 4069
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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Met | His | Pro | Pro | Glu | Thr | Thr | Thr | Lys | Met | Ala | Ser | Val | Arg | Phe | Met | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | | |
| Val | Thr | Pro | Thr | Lys | Ile | Asp | Asp | Ile | Pro | Gly | Leu | Ser | Asp | Thr | Ser | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| Pro | Asp | Xaa | Ser | Ser | Arg | Ser | Ser | Ser | Arg | Val | Arg | Phe | Ser | Ser | Arg | |
| | | 35 | | | | | 40 | | | | | 45 | | | | |
| Glu | Ser | Val | Pro | Glu | Thr | Ser | Arg | Ser | Glu | Pro | Met | Ser | Glu | Met | Ser | |
| | 50 | | | | | 55 | | | | | 60 | | | | | |
| Gly | Ala | Thr | Thr | Ser | Leu | Ala | Thr | Val | Ala | Leu | Asp | Pro | Pro | Ser | Asp | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | |
| Arg | Thr | Ser | His | Pro | Gln | Asp | Val | Ile | Glu | Asp | Asp | Gly | His | Lys | Lys | |
| | | | | 85 | | | | | 90 | | | | | 95 | | |
| Ala | Arg | Asn | Ala | Tyr | Leu | Asn | Asn | Ser | Asn | Tyr | Glu | Glu | Gly | Asp | Glu | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| Tyr | Phe | Asp | Lys | Asn | Leu | Ala | Leu | Phe | Glu | Glu | Glu | Met | Asp | Thr | Arg | |
| | 115 | | | | | | 120 | | | | | 125 | | | | |
| Pro | Lys | Val | Ser | Ser | Leu | Leu | Asn | Arg | Met | Ala | Asn | Tyr | Thr | Asn | Leu | |
| | 130 | | | | | 135 | | | | | 140 | | | | | |
| Thr | Gln | Gly | Ala | Lys | Glu | His | Glu | Glu | Ala | Glu | Asn | Ile | Thr | Glu | Gly | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| Lys | Lys | Lys | Pro | Thr | Lys | Thr | Pro | Gln | Met | Gly | Thr | Phe | Met | Gly | Val | |
| | | | | 165 | | | | | 170 | | | | | 175 | | |
| Tyr | Leu | Pro | Cys | Leu | Gln | Asn | Ile | Phe | Gly | Val | Ile | Leu | Phe | Leu | Arg | |
| | | 180 | | | | | | 185 | | | | | 190 | | | |
| Leu | Thr | Trp | Val | Val | Gly | Thr | Ala | Gly | Val | Leu | Gln | Ala | Phe | Ala | Ile | |
| | | 195 | | | | | 200 | | | | | 205 | | | | |
| Val | Leu | Ile | Cys | Cys | Cys | Cys | Thr | Met | Leu | Thr | Ala | Ile | Ser | Met | Ser | |
| | 210 | | | | | 215 | | | | | 220 | | | | | |
| Ala | Ile | Ala | Thr | Asn | Gly | Val | Val | Pro | Ala | Gly | Gly | Ser | Tyr | Phe | Met | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | |

Ile Ser Arg Ala Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys
 245 250 255
 Phe Tyr Leu Gly Thr Thr Phe Ala Ala Ala Met Tyr Ile Leu Gly Ala
 260 265 270
 Ile Glu Ile Phe Leu Val Tyr Ile Val Pro Arg Ala Ala Ile Phe His
 275 280 285
 Ser Asp Asp Ala Leu Lys Glu Ser Ala Ala Met Leu Asn Asn Met Arg
 290 295 300
 Val Tyr Gly Thr Ala Phe Leu Val Leu Met Val Leu Val Val Phe Ile
 305 310 315 320
 Gly Val Arg Tyr Val Asn Lys Phe Ala Ser Leu Phe Leu Ala Cys Val
 325 330 335
 Ile Val Ser Ile Leu Ala Ile Tyr Ala Gly Ala Ile Lys Ser Ser Phe
 340 345 350
 Ala Pro Pro His Phe Pro Val Cys Met Leu Gly Asn Arg Thr Leu Ser
 355 360 365
 Ser Arg His Ile Asp Val Cys Ser Lys Thr Lys Glu Ile Asn Asn Met
 370 375 380
 Thr Val Pro Ser Lys Leu Trp Gly Phe Phe Cys Asn Ser Ser Gln Phe
 385 390 395 400
 Phe Asn Ala Thr Cys Asp Glu Tyr Phe Val His Asn Asn Val Thr Ser
 405 410 415
 Ile Gln Gly Ile Pro Gly Leu Ala Ser Gly Ile Ile Thr Glu Asn Leu
 420 425 430
 Trp Ser Asn Tyr Leu Pro Lys Gly Glu Ile Ile Glu Lys Pro Ser Ala
 435 440 445
 Lys Ser Ser Asp Val Leu Gly Ser Leu Asn His Glu Tyr Val Leu Val
 450 455 460
 Asp Ile Thr Thr Ser Phe Thr Xaa Leu Val Gly Ile Phe Phe Pro Ser
 465 470 475 480
 Val Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp
 485 490 495
 Ala Gln Lys Ser Ile Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr Thr
 500 505 510
 Ser Phe Val Tyr Leu Ser Asn Val Val Leu Phe Gly Ala Cys Ile Glu
 515 520 525
 Gly Val Val Leu Arg Asp Lys Phe Gly Asp Ala Val Lys Gly Asn Leu
 530 535 540

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Val | Gly | Thr | Leu | Ser | Trp | Pro | Ser | Pro | Trp | Val | Ile | Val | Ile | Gly | 545 | 550 | 555 | 560 |
| Ser | Phe | Phe | Ser | Thr | Cys | Gly | Ala | Gly | Leu | Gln | Ser | Leu | Thr | Gly | Ala | 565 | 570 | 575 | |
| Pro | Arg | Leu | Leu | Gln | Ala | Ile | Ala | Lys | Asp | Asn | Ile | Ile | Pro | Phe | Leu | 580 | 585 | 590 | |
| Arg | Val | Phe | Gly | His | Ser | Lys | Ala | Asn | Gly | Glu | Pro | Thr | Trp | Ala | Leu | 595 | 600 | 605 | |
| Leu | Leu | Thr | Ala | Ala | Ile | Ala | Glu | Leu | Gly | Ile | Leu | Ile | Ala | Ser | Leu | 610 | 615 | 620 | |
| Asp | Leu | Val | Ala | Pro | Ile | Leu | Ser | Met | Phe | Phe | Leu | Met | Cys | Tyr | Leu | 625 | 630 | 635 | 640 |
| Phe | Val | Asn | Leu | Ala | Cys | Ala | Leu | Gln | Thr | Leu | Leu | Arg | Thr | Pro | Asn | 645 | 650 | 655 | |
| Trp | Arg | Pro | Arg | Phe | Arg | Tyr | Tyr | His | Trp | Ala | Leu | Ser | Phe | Met | Gly | 660 | 665 | 670 | |
| Met | Ser | Ile | Cys | Leu | Ala | Leu | Met | Phe | Ile | Ser | Ser | Trp | Tyr | Tyr | Ala | 675 | 680 | 685 | |
| Ile | Val | Ala | Met | Val | Ile | Ala | Gly | Met | Ile | Tyr | Lys | Tyr | Ile | Glu | Tyr | 690 | 695 | 700 | |
| Gln | Gly | Ala | Glu | Lys | Glu | Trp | Gly | Asp | Gly | Ile | Arg | Gly | Leu | Ser | Leu | 705 | 710 | 715 | 720 |
| Ser | Ala | Ala | Arg | Phe | Ala | Leu | Leu | Arg | Leu | Glu | Glu | Gly | Pro | Pro | His | 725 | 730 | 735 | |
| Thr | Lys | Asn | Trp | Arg | Pro | Gln | Leu | Leu | Val | Leu | Leu | Lys | Leu | Asp | Glu | 740 | 745 | 750 | |
| Asp | Leu | His | Val | Lys | His | Pro | Arg | Leu | Leu | Thr | Phe | Ala | Ser | Gln | Leu | 755 | 760 | 765 | |
| Lys | Ala | Gly | Lys | Gly | Leu | Thr | Ile | Val | Gly | Ser | Val | Ile | Val | Gly | Asn | 770 | 775 | 780 | |
| Phe | Leu | Glu | Asn | Tyr | Gly | Glu | Ala | Leu | Ala | Ala | Glu | Gln | Thr | Ile | Lys | 785 | 790 | 795 | 800 |
| His | Leu | Met | Glu | Ala | Glu | Lys | Val | Lys | Gly | Phe | Cys | Gln | Leu | Val | Val | 805 | 810 | 815 | |
| Ala | Ala | Lys | Leu | Arg | Glu | Gly | Ile | Ser | His | Leu | Ile | Gln | Ser | Cys | Gly | 820 | 825 | 830 | |
| Leu | Gly | Gly | Met | Lys | His | Asn | Thr | Val | Val | Met | Gly | Trp | Pro | Asn | Gly | 835 | 840 | 845 | |

Trp Arg Gln Ser Glu Asp Ala Arg Ala Trp Lys Thr Phe Ile Gly Thr
 850 855 860
 Val Arg Val Thr Thr Ala Ala His Leu Ala Leu Leu Val Ala Lys Asn
 865 870 875 880
 Ile Ser Phe Phe Pro Ser Asn Val Glu Gln Phe Ser Glu Gly Asn Ile
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 Asp Val Trp Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu Pro
 900 905 910
 Phe Leu Leu Lys Gln His Lys Val Trp Arg Lys Cys Ser Ile Arg Ile
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 Phe Thr Val Ala Gln Leu Glu Asp Asn Ser Ile Gln Met Lys Lys Asp
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Met Val Thr Pro Thr Lys Ile Asp Asp Ile Pro Gly Leu Ser Asp Thr
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agc ccg gac ctc agc tct cgg tct agt tct cga gta aga ttt agc tcc 144
Ser Pro Asp Leu Ser Ser Arg Ser Ser Arg Val Arg Phe Ser Ser
35 40 45

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Arg Glu Ser Val Pro Glu Thr Ser Arg Ser Glu Pro Met Ser Glu Leu
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Ser Gly Ala Thr Thr Ser Leu Ala Thr Val Ala Leu Asp Pro Ser Ser
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Asp Arg Thr Ser Asn Pro Gln Asp Val Thr Glu Asp Asp Gly His Lys
80 85 90 95

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Lys Ala Arg Asn Ala Tyr Xaa Asn Asn Ser Asn Tyr Glu Glu Gly Asp
100 105 110

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115 120 125

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| aga cca aag gtg tct tct ctc ctc aac cgc atg gcc aac tat aca aat | 432 |
| Arg Pro Lys Val Ser Ser Leu Leu Asn Arg Met Ala Asn Tyr Thr Asn | |
| 130 135 140 | |
| ctg aca caa gga gca aag gaa cat gaa gag gca gag aac atc act gaa | 480 |
| Leu Thr Gln Gly Ala Lys Glu His Glu Glu Ala Glu Asn Ile Thr Glu | |
| 145 150 155 | |
| ggg aaa aag aag cct acc aag agc ccc caa atg ggt act ttc atg ggt | 528 |
| Gly Lys Lys Lys Pro Thr Lys Ser Pro Gln Met Gly Thr Phe Met Gly | |
| 160 165 170 175 | |
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| Val Tyr Leu Pro Cys Leu Gln Asn Ile Phe Gly Val Ile Leu Phe Leu | |
| 180 185 190 | |
| cgt ctt acc tgg gta gtg gga aca gct gga atc ctt cag gcc ttt gca | 624 |
| Arg Leu Thr Trp Val Val Gly Thr Ala Gly Ile Leu Gln Ala Phe Ala | |
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| att gtc ctc atc tgc tgc tgc tgt aca atg tta act gcc atc tcc atg | 672 |
| Ile Val Leu Ile Cys Cys Cys Cys Thr Met Leu Thr Ala Ile Ser Met | |
| 210 215 220 | |
| agc gcc atc gcc act aac gga gtg gtg cca gct ggg ggc tca tac ttc | 720 |
| Ser Ala Ile Ala Thr Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Phe | |
| 225 230 235 | |
| atg att tcc aga gcc ctg ggc cca gag ttt ggc ggg gct gta ggc ctc | 768 |
| Met Ile Ser Arg Ala Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu | |
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| tgc ttt tat ctt ggc acc aca ttt gca gca gcc atg tat att ctt ggt | 816 |
| Cys Phe Tyr Leu Gly Thr Thr Phe Ala Ala Ala Met Tyr Ile Leu Gly | |
| 260 265 270 | |
| gcc att gaa atc ttt ctg gta tac att gtc ccc cga gct gcc atc ttt | 864 |
| Ala Ile Glu Ile Phe Leu Val Tyr Ile Val Pro Arg Ala Ala Ile Phe | |
| 275 280 285 | |
| cgg agt gac gat gca ctc aag gag tca gca gct atg ctg aac aac atg | 912 |
| Arg Ser Asp Asp Ala Leu Lys Glu Ser Ala Ala Met Leu Asn Asn Met | |
| 290 295 300 | |
| cgc gtc tat ggt aca gcc ttc ttg gtc ctc atg gtc ttg gtg gta ttc | 960 |
| Arg Val Tyr Gly Thr Ala Phe Leu Val Leu Met Val Leu Val Val Phe | |
| 305 310 315 | |
| atc ggc gta cgc tat gtg aat aag ttt gcc tca ctc ttc ctg gcc tgt | 1008 |
| Ile Gly Val Arg Tyr Val Asn Lys Phe Ala Ser Leu Phe Leu Ala Cys | |
| 320 325 330 335 | |
| gta att gtg tcg atc ttg gct atc tat gct ggt gcc atc aag tct tcc | 1056 |
| Val Ile Val Ser Ile Leu Ala Ile Tyr Ala Gly Ala Ile Lys Ser Ser | |
| 340 345 350 | |

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| ttt gct cca cca cac ttc ccg gtc tgt atg ctg ggc aac cgt acc ctg | 1104 |
| Phe Ala Pro Pro His Phe Pro Val Cys Met Leu Gly Asn Arg Thr Leu | |
| 355 360 365 | |
| tca tca aga cac ctt gac att tgc tct aag acc aag gag gtt gac aac | 1152 |
| Ser Ser Arg His Leu Asp Ile Cys Ser Lys Thr Lys Glu Val Asp Asn | |
| 370 375 380 | |
| atg aca gta cca tca aag tta tgg gga ttc ttc tgc aac tcg agt cag | 1200 |
| Met Thr Val Pro Ser Lys Leu Trp Gly Phe Phe Cys Asn Ser Ser Gln | |
| 385 390 395 | |
| ttc ttt aat gcc acc tgt gat gag tac ttt gtt cac aat aac gtc atc | 1248 |
| Phe Phe Asn Ala Thr Cys Asp Glu Tyr Phe Val His Asn Asn Val Ile | |
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| tca atc caa ggc att cca ggg ttg gct agt ggt atc att act gaa aat | 1296 |
| Ser Ile Gln Gly Ile Pro Gly Leu Ala Ser Gly Ile Ile Thr Glu Asn | |
| 420 425 430 | |
| ctt tgg agt aat tat tta cca aag ggt gag ata att gaa aag cca tca | 1344 |
| Leu Trp Ser Asn Tyr Leu Pro Lys Gly Glu Ile Ile Glu Lys Pro Ser | |
| 435 440 445 | |
| gcc aag tca tct gat gtc tta ggc aac tta aac cat gaa tat gtt ctt | 1392 |
| Ala Lys Ser Ser Asp Val Leu Gly Asn Leu Asn His Glu Tyr Val Leu | |
| 450 455 460 | |
| gct gat atc acc acc tcc ttc act ctg ctg gtg ggg atc ttc ttt ccc | 1440 |
| Ala Asp Ile Thr Thr Ser Phe Thr Leu Leu Val Gly Ile Phe Phe Pro | |
| 465 470 475 | |
| tcg gtc aca ggt atc atg gct ggg tca aac aga tct gga gat ctg aaa | 1488 |
| Ser Val Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys | |
| 480 485 490 495 | |
| gat gcc cag aag tct att ccc att ggg acc atc ctt gcc atc ctg acc | 1536 |
| Asp Ala Gln Lys Ser Ile Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr | |
| 500 505 510 | |
| aca tcc ttt gtg tat tta agc aat gtt gtc ctt ttt ggt gca tgt att | 1584 |
| Thr Ser Phe Val Tyr Leu Ser Asn Val Val Leu Phe Gly Ala Cys Ile | |
| 515 520 525 | |
| gaa gga gtc gtt ctc aga gac aaa ttt ggg gat gct gta aaa ggg aat | 1632 |
| Glu Gly Val Val Leu Arg Asp Lys Phe Gly Asp Ala Val Lys Gly Asn | |
| 530 535 540 | |
| ttg gtt gta ggc acc tta tcc tgg cca tcc ccg tgg gtg atc gtt att | 1680 |
| Leu Val Val Gly Thr Leu Ser Trp Pro Ser Pro Trp Val Ile Val Ile | |
| 545 550 555 | |
| ggc tcc ttc ttt tca aca tgt ggg gct ggg ctg cag agc ctc aca ggt | 1728 |
| Gly Ser Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly | |
| 560 565 570 575 | |

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| gcg cct cgg ctg ctg cag gct atc gcc aag gat aac atc ata cct ttc | 1776 |
| Ala Pro Arg Leu Leu Gln Ala Ile Ala Lys Asp Asn Ile Ile Pro Phe | |
| 580 585 590 | |
| ctt agg gtt ttt ggt cac agc aaa gct aat ggg gaa cct acc tgg gct | 1824 |
| Leu Arg Val Phe Gly His Ser Lys Ala Asn Gly Glu Pro Thr Trp Ala | |
| 595 600 605 | |
| tta ctt cta act gct gcc ata gca gag ctg gga att ctc atc gcc tcc | 1872 |
| Leu Leu Leu Thr Ala Ala Ile Ala Glu Leu Gly Ile Leu Ile Ala Ser | |
| 610 615 620 | |
| ctg gat ctc gtg gcc cca att ntt tcc atg ttt ttt ctc atg tgt tac | 1920 |
| Leu Asp Leu Val Ala Pro Ile Xaa Ser Met Phe Phe Leu Met Cys Tyr | |
| 625 630 635 | |
| ctc ttt gtg aac ttg gct tgt gcc ttg caa aca ttg ctg cga acc ccc | 1968 |
| Leu Phe Val Asn Leu Ala Cys Ala Leu Gln Thr Leu Leu Arg Thr Pro | |
| 640 645 650 655 | |
| aac tgg agg cct cga ttc cgc tat tat cac tgg gcc ctc tct ttc atg | 2016 |
| Asn Trp Arg Pro Arg Phe Arg Tyr Tyr His Trp Ala Leu Ser Phe Met | |
| 660 665 670 | |
| gga atg agt atc tgt cta gct ctg atg ttc att tct tct tgg tat tat | 2064 |
| Gly Met Ser Ile Cys Leu Ala Leu Met Phe Ile Ser Ser Trp Tyr Tyr | |
| 675 680 685 | |
| gcc att gta gct atg gta ata gct ggc atg atc tac aag tac att gaa | 2112 |
| Ala Ile Val Ala Met Val Ile Ala Gly Met Ile Tyr Lys Tyr Ile Glu | |
| 690 695 700 | |
| tat caa ggg gct gag aaa gaa tgg ggg gat ggt atc cgt ggg ctg tcg | 2160 |
| Tyr Gln Gly Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser | |
| 705 710 715 | |
| ctc agt gca gcc cgc ttc gct ttg ctc cgt cta gag gaa gga cct cct | 2208 |
| Leu Ser Ala Ala Arg Phe Ala Leu Leu Arg Leu Glu Glu Gly Pro Pro | |
| 720 725 730 735 | |
| cac act aaa aac tgg agg cct cag ctg ctc gtc cta ctg aag ctg gat | 2256 |
| His Thr Lys Asn Trp Arg Pro Gln Leu Leu Val Leu Leu Lys Leu Asp | |
| 740 745 750 | |
| gaa gat tta cac gtc aag cac cct cgc ctc ctc acc ttt gcc tcc cag | 2304 |
| Glu Asp Leu His Val Lys His Pro Arg Leu Leu Thr Phe Ala Ser Gln | |
| 755 760 765 | |
| ctc aag gca gga aag gga ctc acg att gtg ggc tct gtc atc gtg ggg | 2352 |
| Leu Lys Ala Gly Lys Gly Leu Thr Ile Val Gly Ser Val Ile Val Gly | |
| 770 775 780 | |
| aac ttc ttg gag aac tat ggt gac gcg ctc gcg gca gag cag acc att | 2400 |
| Asn Phe Leu Glu Asn Tyr Gly Asp Ala Leu Ala Ala Glu Gln Thr Ile | |
| 785 790 795 | |

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| aag cac cta atg gag gca gaa aag gta aaa gga ttc tgc caa ttg gtg | 2448 |
| Lys His Leu Met Glu Ala Glu Lys Val Lys Gly Phe Cys Gln Leu Val | |
| 800 805 810 815 | |
| gtg gct gcc aag ctg aaa gag ggc att tca cac ctc atc cag tcc tgt | 2496 |
| Val Ala Ala Lys Leu Lys Glu Gly Ile Ser His Leu Ile Gln Ser Cys | |
| 820 825 830 | |
| ggc ctc gga ggc atg aaa cac aac aca gtg gtg atg ggc tgg ccc aat | 2544 |
| Gly Leu Gly Gly Met Lys His Asn Thr Val Val Met Gly Trp Pro Asn | |
| 835 840 845 | |
| ggc tgg cgt cag agt gaa gat gct cgc gct tgg aag act ttc att ggc | 2592 |
| Gly Trp Arg Gln Ser Glu Asp Ala Arg Ala Trp Lys Thr Phe Ile Gly | |
| 850 855 860 | |
| aca gta cga gtg aca act gct gcc cat cta gcc ctg ctg gtg gct aaa | 2640 |
| Thr Val Arg Val Thr Thr Ala Ala His Leu Ala Leu Leu Val Ala Lys | |
| 865 870 875 | |
| aat gtc tcc ttc ttt ccc agc aat gtg gag cag ttt tct gag ggc aac | 2688 |
| Asn Val Ser Phe Phe Pro Ser Asn Val Glu Gln Phe Ser Glu Gly Asn | |
| 880 885 890 895 | |
| att gat gtg cgg tgg att gtg cat gat ggg ggc atg ctc atg cta tta | 2736 |
| Ile Asp Val Arg Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu | |
| 900 905 910 | |
| ccg ttc ctg ctg aaa cag cac aag gtt tgg cgg aaa tgc agc ata cgg | 2784 |
| Pro Phe Leu Leu Lys Gln His Lys Val Trp Arg Lys Cys Ser Ile Arg | |
| 915 920 925 | |
| atc ttc aca gta gcc caa cta gaa gac aac agt atc cag atg aag aag | 2832 |
| Ile Phe Thr Val Ala Gln Leu Glu Asp Asn Ser Ile Gln Met Lys Lys | |
| 930 935 940 | |
| gat ctg gcc acc ttt ctg tac cac ctg cgc att gag gca gaa gtg gaa | 2880 |
| Asp Leu Ala Thr Phe Leu Tyr His Leu Arg Ile Glu Ala Glu Val Glu | |
| 945 950 955 | |
| gtg gtg gag atg cac gac agt gac ata tct gcc tat aca tat gag cgc | 2928 |
| Val Val Glu Met His Asp Ser Asp Ile Ser Ala Tyr Thr Tyr Glu Arg | |
| 960 965 970 975 | |
| acc ctg atg atg gag cag agg tcc cag atg ctt cgg cat atg cgg ctg | 2976 |
| Thr Leu Met Met Glu Gln Arg Ser Gln Met Leu Arg His Met Arg Leu | |
| 980 985 990 | |
| tcc aaa aca gag cga gac agg gag gca cag ctg gtg aaa gat cga aac | 3024 |
| Ser Lys Thr Glu Arg Asp Arg Glu Ala Gln Leu Val Lys Asp Arg Asn | |
| 995 1000 1005 | |
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| Ser Met Leu Arg Leu Thr Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr | |
| 1010 1015 1020 | |

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| Glu Thr Tyr Gln Glu Lys Val His Met Thr Trp Thr Lys Asp Lys Tyr | |
| 1025 1030 1035 | |
| atg gca tcc cgg ggg caa aag gtc aag tca atg gaa gga ttc cag gac | 3168 |
| Met Ala Ser Arg Gly Gln Lys Val Lys Ser Met Glu Gly Phe Gln Asp | |
| 1040 1045 1050 1055 | |
| cta ctt aat atg cgt ccg gac cag tcc aac gtg aga cgg atg cat aca | 3216 |
| Leu Leu Asn Met Arg Pro Asp Gln Ser Asn Val Arg Arg Met His Thr | |
| 1060 1065 1070 | |
| gca gtg aag ctc aat gaa gtt ata gtc aac aag tct cat gaa gca aag | 3264 |
| Ala Val Lys Leu Asn Glu Val Ile Val Asn Lys Ser His Glu Ala Lys | |
| 1075 1080 1085 | |
| ctg gtt ttg ttg aat atg cca gga cca ccc cgg aac cct gaa ggt gat | 3312 |
| Leu Val Leu Leu Asn Met Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp | |
| 1090 1095 1100 | |
| gaa aac tac atg gaa ttt cta gaa gtg ntc act gag gga tta gaa cga | 3360 |
| Glu Asn Tyr Met Glu Phe Leu Glu Val Xaa Thr Glu Gly Leu Glu Arg | |
| 1105 1110 1115 | |
| gtc ctt ctt gtc cgg ggt ggt ggc agt gag gtc atc acc att tac tca | 3408 |
| Val Leu Leu Val Arg Gly Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser | |
| 1120 1125 1130 1135 | |
| taatcagctg tgggagattc tgcgtggtcc gacttcctta agactcatcg tccatggaga | 3468 |
| tgatagctct ttctaccac tccactcta ttcttgaga gctgagcccc atctatgctc | 3528 |
| ttggctgcaa catgatctgc catcccagca gaaacaaata atccctcaac agaagaatgg | 3588 |
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6075

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<400> 6

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | His | Pro | Pro | Glu | Ala | Thr | Thr | Lys | Met | Ser | Ser | Val | Arg | Phe | Met |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |
| Val | Thr | Pro | Thr | Lys | Ile | Asp | Asp | Ile | Pro | Gly | Leu | Ser | Asp | Thr | Ser |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Pro | Asp | Leu | Ser | Ser | Arg | Ser | Ser | Ser | Arg | Val | Arg | Phe | Ser | Ser | Arg |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Glu | Ser | Val | Pro | Glu | Thr | Ser | Arg | Ser | Glu | Pro | Met | Ser | Glu | Leu | Ser |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Gly | Ala | Thr | Thr | Ser | Leu | Ala | Thr | Val | Ala | Leu | Asp | Pro | Ser | Ser | Asp |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Arg | Thr | Ser | Asn | Pro | Gln | Asp | Val | Thr | Glu | Asp | Asp | Gly | His | Lys | Lys |
| | | | 85 | | | | | | 90 | | | | | 95 | |
| Ala | Arg | Asn | Ala | Tyr | Xaa | Asn | Asn | Ser | Asn | Tyr | Glu | Glu | Gly | Asp | Glu |
| | | 100 | | | | | | 105 | | | | | 110 | | |
| Tyr | Phe | Asp | Lys | Asn | Leu | Ala | Leu | Phe | Glu | Glu | Glu | Met | Asp | Thr | Arg |
| | 115 | | | | | | 120 | | | | | 125 | | | |
| Pro | Lys | Val | Ser | Ser | Leu | Leu | Asn | Arg | Met | Ala | Asn | Tyr | Thr | Asn | Leu |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Thr | Gln | Gly | Ala | Lys | Glu | His | Glu | Glu | Ala | Glu | Asn | Ile | Thr | Glu | Gly |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Lys | Lys | Pro | Thr | Lys | Ser | Pro | Gln | Met | Gly | Thr | Phe | Met | Gly | Val | 165 | 170 | 175 |
| Tyr | Leu | Pro | Cys | Leu | Gln | Asn | Ile | Phe | Gly | Val | Ile | Leu | Phe | Leu | Arg | 180 | 185 | 190 |
| Leu | Thr | Trp | Val | Val | Gly | Thr | Ala | Gly | Ile | Leu | Gln | Ala | Phe | Ala | Ile | 195 | 200 | 205 |
| Val | Leu | Ile | Cys | Cys | Cys | Cys | Thr | Met | Leu | Thr | Ala | Ile | Ser | Met | Ser | 210 | 215 | 220 |
| Ala | Ile | Ala | Thr | Asn | Gly | Val | Val | Pro | Ala | Gly | Gly | Ser | Tyr | Phe | Met | 225 | 230 | 235 |
| Ile | Ser | Arg | Ala | Leu | Gly | Pro | Glu | Phe | Gly | Gly | Ala | Val | Gly | Leu | Cys | 245 | 250 | 255 |
| Phe | Tyr | Leu | Gly | Thr | Thr | Phe | Ala | Ala | Ala | Met | Tyr | Ile | Leu | Gly | Ala | 260 | 265 | 270 |
| Ile | Glu | Ile | Phe | Leu | Val | Tyr | Ile | Val | Pro | Arg | Ala | Ala | Ile | Phe | Arg | 275 | 280 | 285 |
| Ser | Asp | Asp | Ala | Leu | Lys | Glu | Ser | Ala | Ala | Met | Leu | Asn | Asn | Met | Arg | 290 | 295 | 300 |
| Val | Tyr | Gly | Thr | Ala | Phe | Leu | Val | Leu | Met | Val | Leu | Val | Val | Phe | Ile | 305 | 310 | 315 |
| Gly | Val | Arg | Tyr | Val | Asn | Lys | Phe | Ala | Ser | Leu | Phe | Leu | Ala | Cys | Val | 325 | 330 | 335 |
| Ile | Val | Ser | Ile | Leu | Ala | Ile | Tyr | Ala | Gly | Ala | Ile | Lys | Ser | Ser | Phe | 340 | 345 | 350 |
| Ala | Pro | Pro | His | Phe | Pro | Val | Cys | Met | Leu | Gly | Asn | Arg | Thr | Leu | Ser | 355 | 360 | 365 |
| Ser | Arg | His | Leu | Asp | Ile | Cys | Ser | Lys | Thr | Lys | Glu | Val | Asp | Asn | Met | 370 | 375 | 380 |
| Thr | Val | Pro | Ser | Lys | Leu | Trp | Gly | Phe | Phe | Cys | Asn | Ser | Ser | Gln | Phe | 385 | 390 | 395 |
| Phe | Asn | Ala | Thr | Cys | Asp | Glu | Tyr | Phe | Val | His | Asn | Asn | Val | Ile | Ser | 405 | 410 | 415 |
| Ile | Gln | Gly | Ile | Pro | Gly | Leu | Ala | Ser | Gly | Ile | Ile | Thr | Glu | Asn | Leu | 420 | 425 | 430 |
| Trp | Ser | Asn | Tyr | Leu | Pro | Lys | Gly | Glu | Ile | Ile | Glu | Lys | Pro | Ser | Ala | 435 | 440 | 445 |
| Lys | Ser | Ser | Asp | Val | Leu | Gly | Asn | Leu | Asn | His | Glu | Tyr | Val | Leu | Ala | 450 | 455 | 460 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Asp | Ile | Thr | Thr | Ser | Phe | Thr | Leu | Leu | Val | Gly | Ile | Phe | Phe | Pro | Ser | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| Val | Thr | Gly | Ile | Met | Ala | Gly | Ser | Asn | Arg | Ser | Gly | Asp | Leu | Lys | Asp | |
| | | | | 485 | | | | | 490 | | | | | | 495 | |
| Ala | Gln | Lys | Ser | Ile | Pro | Ile | Gly | Thr | Ile | Leu | Ala | Ile | Leu | Thr | Thr | |
| | | | 500 | | | | | 505 | | | | | | 510 | | |
| Ser | Phe | Val | Tyr | Leu | Ser | Asn | Val | Val | Leu | Phe | Gly | Ala | Cys | Ile | Glu | |
| | | 515 | | | | | 520 | | | | | 525 | | | | |
| Gly | Val | Val | Leu | Arg | Asp | Lys | Phe | Gly | Asp | Ala | Val | Lys | Gly | Asn | Leu | |
| | 530 | | | | | 535 | | | | | | 540 | | | | |
| Val | Val | Gly | Thr | Leu | Ser | Trp | Pro | Ser | Pro | Trp | Val | Ile | Val | Ile | Gly | |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 | |
| Ser | Phe | Phe | Ser | Thr | Cys | Gly | Ala | Gly | Leu | Gln | Ser | Leu | Thr | Gly | Ala | |
| | | | | 565 | | | | | 570 | | | | | | 575 | |
| Pro | Arg | Leu | Leu | Gln | Ala | Ile | Ala | Lys | Asp | Asn | Ile | Ile | Pro | Phe | Leu | |
| | | 580 | | | | | | 585 | | | | | | 590 | | |
| Arg | Val | Phe | Gly | His | Ser | Lys | Ala | Asn | Gly | Glu | Pro | Thr | Trp | Ala | Leu | |
| | | 595 | | | | | 600 | | | | | | 605 | | | |
| Leu | Leu | Thr | Ala | Ala | Ile | Ala | Glu | Leu | Gly | Ile | Leu | Ile | Ala | Ser | Leu | |
| | 610 | | | | | 615 | | | | | | 620 | | | | |
| Asp | Leu | Val | Ala | Pro | Ile | Xaa | Ser | Met | Phe | Phe | Leu | Met | Cys | Tyr | Leu | |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 | |
| Phe | Val | Asn | Leu | Ala | Cys | Ala | Leu | Gln | Thr | Leu | Leu | Arg | Thr | Pro | Asn | |
| | | | 645 | | | | | | 650 | | | | | 655 | | |
| Trp | Arg | Pro | Arg | Phe | Arg | Tyr | Tyr | His | Trp | Ala | Leu | Ser | Phe | Met | Gly | |
| | | 660 | | | | | | 665 | | | | | | 670 | | |
| Met | Ser | Ile | Cys | Leu | Ala | Leu | Met | Phe | Ile | Ser | Ser | Trp | Tyr | Tyr | Ala | |
| | | 675 | | | | | 680 | | | | | | 685 | | | |
| Ile | Val | Ala | Met | Val | Ile | Ala | Gly | Met | Ile | Tyr | Lys | Tyr | Ile | Glu | Tyr | |
| | 690 | | | | | 695 | | | | | 700 | | | | | |
| Gln | Gly | Ala | Glu | Lys | Glu | Trp | Gly | Asp | Gly | Ile | Arg | Gly | Leu | Ser | Leu | |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 | |
| Ser | Ala | Ala | Arg | Phe | Ala | Leu | Leu | Arg | Leu | Glu | Glu | Gly | Pro | Pro | His | |
| | | | 725 | | | | | | 730 | | | | | 735 | | |
| Thr | Lys | Asn | Trp | Arg | Pro | Gln | Leu | Leu | Val | Leu | Leu | Lys | Leu | Asp | Glu | |
| | | | 740 | | | | | 745 | | | | | | 750 | | |
| Asp | Leu | His | Val | Lys | His | Pro | Arg | Leu | Leu | Thr | Phe | Ala | Ser | Gln | Leu | |
| | | 755 | | | | | 760 | | | | | 765 | | | | |

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| Lys | Ala | Gly | Lys | Gly | Leu | Thr | Ile | Val | Gly | Ser | Val | Ile | Val | Gly | Asn | 770 | 775 | 780 | |
| Phe | Leu | Glu | Asn | Tyr | Gly | Asp | Ala | Leu | Ala | Ala | Glu | Gln | Thr | Ile | Lys | 785 | 790 | 795 | 800 |
| His | Leu | Met | Glu | Ala | Glu | Lys | Val | Lys | Gly | Phe | Cys | Gln | Leu | Val | Val | 805 | 810 | 815 | |
| Ala | Ala | Lys | Leu | Lys | Glu | Gly | Ile | Ser | His | Leu | Ile | Gln | Ser | Cys | Gly | 820 | 825 | 830 | |
| Leu | Gly | Gly | Met | Lys | His | Asn | Thr | Val | Val | Met | Gly | Trp | Pro | Asn | Gly | 835 | 840 | 845 | |
| Trp | Arg | Gln | Ser | Glu | Asp | Ala | Arg | Ala | Trp | Lys | Thr | Phe | Ile | Gly | Thr | 850 | 855 | 860 | |
| Val | Arg | Val | Thr | Thr | Ala | Ala | His | Leu | Ala | Leu | Leu | Val | Ala | Lys | Asn | 865 | 870 | 875 | 880 |
| Val | Ser | Phe | Phe | Pro | Ser | Asn | Val | Glu | Gln | Phe | Ser | Glu | Gly | Asn | Ile | 885 | 890 | 895 | |
| Asp | Val | Arg | Trp | Ile | Val | His | Asp | Gly | Gly | Met | Leu | Met | Leu | Leu | Pro | 900 | 905 | 910 | |
| Phe | Leu | Leu | Lys | Gln | His | Lys | Val | Trp | Arg | Lys | Cys | Ser | Ile | Arg | Ile | 915 | 920 | 925 | |
| Phe | Thr | Val | Ala | Gln | Leu | Glu | Asp | Asn | Ser | Ile | Gln | Met | Lys | Lys | Asp | 930 | 935 | 940 | |
| Leu | Ala | Thr | Phe | Leu | Tyr | His | Leu | Arg | Ile | Glu | Ala | Glu | Val | Glu | Val | 945 | 950 | 955 | 960 |
| Val | Glu | Met | His | Asp | Ser | Asp | Ile | Ser | Ala | Tyr | Thr | Tyr | Glu | Arg | Thr | 965 | 970 | 975 | |
| Leu | Met | Met | Glu | Gln | Arg | Ser | Gln | Met | Leu | Arg | His | Met | Arg | Leu | Ser | 980 | 985 | 990 | |
| Lys | Thr | Glu | Arg | Asp | Arg | Glu | Ala | Gln | Leu | Val | Lys | Asp | Arg | Asn | Ser | 995 | 1000 | 1005 | |
| Met | Leu | Arg | Leu | Thr | Ser | Ile | Gly | Ser | Asp | Glu | Asp | Glu | Glu | Thr | Glu | 1010 | 1015 | 1020 | |
| Thr | Tyr | Gln | Glu | Lys | Val | His | Met | Thr | Trp | Thr | Lys | Asp | Lys | Tyr | Met | 1025 | 1030 | 1035 | 1040 |
| Ala | Ser | Arg | Gly | Gln | Lys | Val | Lys | Ser | Met | Glu | Gly | Phe | Gln | Asp | Leu | 1045 | 1050 | 1055 | |
| Leu | Asn | Met | Arg | Pro | Asp | Gln | Ser | Asn | Val | Arg | Arg | Met | His | Thr | Ala | 1060 | 1065 | 1070 | |

Val Lys Leu Asn Glu Val Ile Val Asn Lys Ser His Glu Ala Lys Leu
 1075 1080 1085

Val Leu Leu Asn Met Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp Glu
 1090 1095 1100

Asn Tyr Met Glu Phe Leu Glu Val Xaa Thr Glu Gly Leu Glu Arg Val
 1105 1110 1115 1120

Leu Leu Val Arg Gly Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser
 1125 1130 1135

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 Met His Pro Pro Glu Ala Thr Thr Lys Met Ser Ser Val Arg Phe
 1 5 10 15
 atg gtg aca cca act aag att gat gac att cca ggt ttg tca gac acc 96
 Met Val Thr Pro Thr Lys Ile Asp Asp Ile Pro Gly Leu Ser Asp Thr
 20 25 30
 agc ccg gac ntc agc tct cgg tct agt tct cga gta aga ttt agc tcc 144
 Ser Pro Asp Xaa Ser Ser Arg Ser Ser Ser Arg Val Arg Phe Ser Ser
 35 40 45
 cga gaa agt gtg cca gaa aca agc cgt agt gag cct atg agc gaa ctg 192
 Arg Glu Ser Val Pro Glu Thr Ser Arg Ser Glu Pro Met Ser Glu Leu
 50 55 60
 tct ggg gct act act tct ctg gca act gtt gcc cta gat cct tcc agt 240
 Ser Gly Ala Thr Thr Ser Leu Ala Thr Val Ala Leu Asp Pro Ser Ser
 65 70 75

| | |
|-----------------------------------------------------------------|-----|
| gac cgg act tct aat ccc cag gat gtt acg gag gac ccg agt cag aac | 288 |
| Asp Arg Thr Ser Asn Pro Gln Asp Val Thr Glu Asp Pro Ser Gln Asn | |
| 80 85 90 95 | |
| tcc atc aca ggg gag cac agc cag ctg tta gat gac ggc cat aaa aaa | 336 |
| Ser Ile Thr Gly Glu His Ser Gln Leu Leu Asp Asp Gly His Lys Lys | |
| 100 105 110 | |
| gcc cga aat gct tat ctc aat aat tcc aac tat gaa gaa gga gac gaa | 384 |
| Ala Arg Asn Ala Tyr Leu Asn Asn Ser Asn Tyr Glu Glu Gly Asp Glu | |
| 115 120 125 | |
| tat ttt gat aaa aat ttg gca ctc ttt gag gaa gaa atg gac acc aga | 432 |
| Tyr Phe Asp Lys Asn Leu Ala Leu Phe Glu Glu Glu Met Asp Thr Arg | |
| 130 135 140 | |
| cca aag gtg tct tct ctc ctc aac cgc atg gcc aac tat aca aat ctg | 480 |
| Pro Lys Val Ser Ser Leu Leu Asn Arg Met Ala Asn Tyr Thr Asn Leu | |
| 145 150 155 | |
| aca caa gga gca aag gaa cat gaa gag gca gag aac atc act gaa ggg | 528 |
| Thr Gln Gly Ala Lys Glu His Glu Glu Ala Glu Asn Ile Thr Glu Gly | |
| 160 165 170 175 | |
| aaa aag aag cct acc aag agc ccc caa atg ggt act ttc atg ggt gtc | 576 |
| Lys Lys Lys Pro Thr Lys Ser Pro Gln Met Gly Thr Phe Met Gly Val | |
| 180 185 190 | |
| tac ctc cca tgt cta cag aac atc ttt gga gtg atc ctc ttc ctg cgt | 624 |
| Tyr Leu Pro Cys Leu Gln Asn Ile Phe Gly Val Ile Leu Phe Leu Arg | |
| 195 200 205 | |
| ctt acc tgg gta gtg gga aca gct gga atc ctt cag gcc ttt gca att | 672 |
| Leu Thr Trp Val Val Gly Thr Ala Gly Ile Leu Gln Ala Phe Ala Ile | |
| 210 215 220 | |
| gtc ctc atc tgc tgc tgc tgt aca atg tta act gcc atc tcc atg agc | 720 |
| Val Leu Ile Cys Cys Cys Cys Thr Met Leu Thr Ala Ile Ser Met Ser | |
| 225 230 235 | |
| gcc atc gcc act aac gga gtg gtg cca gct ggg ggc tca tac ttc atg | 768 |
| Ala Ile Ala Thr Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Phe Met | |
| 240 245 250 255 | |
| att tcc aga gcc ctg ggc cca gag ttt ggc ggg gct gta ggc ctc tgc | 816 |
| Ile Ser Arg Ala Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys | |
| 260 265 270 | |
| ttt tat ctt ggc acc aca ttt gca gca gcc atg tat att ctt ggt gcc | 864 |
| Phe Tyr Leu Gly Thr Thr Phe Ala Ala Ala Met Tyr Ile Leu Gly Ala | |
| 275 280 285 | |
| att gaa atc ttt ctg gta tac att gtc ccc cga gct gcc atc ttt cgg | 912 |
| Ile Glu Ile Phe Leu Val Tyr Ile Val Pro Arg Ala Ala Ile Phe Arg | |
| 290 295 300 | |

| | |
|-----------------------------------------------------------------|------|
| agt gac gat gca ntc aag gag tca gca gct atg ctg aac aac atg cgc | 960 |
| Ser Asp Asp Ala Xaa Lys Glu Ser Ala Ala Met Leu Asn Asn Met Arg | |
| 305 310 315 | |
| gtc tat ggt aca gcc ttc ttg gtc ctc atg gtc ttg gtg gta ttc atc | 1008 |
| Val Tyr Gly Thr Ala Phe Leu Val Leu Met Val Leu Val Val Phe Ile | |
| 320 325 330 335 | |
| ggc gta cgc tat gtg aat aag ttt gcc tca ctc ttc ctg gcc tgt gta | 1056 |
| Gly Val Arg Tyr Val Asn Lys Phe Ala Ser Leu Phe Leu Ala Cys Val | |
| 340 345 350 | |
| att gtg tcg atc ttg gct atc tat gct ggt gcc atc aag tct tcc ttt | 1104 |
| Ile Val Ser Ile Leu Ala Ile Tyr Ala Gly Ala Ile Lys Ser Ser Phe | |
| 355 360 365 | |
| gct cca cca cac ttc ccg gtc tgt atg ctg ggc aac cgt acc ctg tca | 1152 |
| Ala Pro Pro His Phe Pro Val Cys Met Leu Gly Asn Arg Thr Leu Ser | |
| 370 375 380 | |
| tca aga cac ctt gac att tgc tct aag acc aag gag gtt gac aac atg | 1200 |
| Ser Arg His Leu Asp Ile Cys Ser Lys Thr Lys Glu Val Asp Asn Met | |
| 385 390 395 | |
| aca gta cca tca aag tta tgg gga ttc ttc tgc aac tcg agt cag ttc | 1248 |
| Thr Val Pro Ser Lys Leu Trp Gly Phe Phe Cys Asn Ser Ser Gln Phe | |
| 400 405 410 415 | |
| ttt aat gcc acc tgt gat gag tac ttt gtt cac aat aac gtc atc tca | 1296 |
| Phe Asn Ala Thr Cys Asp Glu Tyr Phe Val His Asn Asn Val Ile Ser | |
| 420 425 430 | |
| atc caa ggc att cca ggg ttg gct agt ggt atc att act gaa aat ctt | 1344 |
| Ile Gln Gly Ile Pro Gly Leu Ala Ser Gly Ile Ile Thr Glu Asn Leu | |
| 435 440 445 | |
| tgg agt aat tat tta cca aag ggt gag ata att gaa aag cca tca gcc | 1392 |
| Trp Ser Asn Tyr Leu Pro Lys Gly Glu Ile Ile Glu Lys Pro Ser Ala | |
| 450 455 460 | |
| aag tca tct gat gtc tta ggc aac tta aac cat gaa tat gtt ctt gct | 1440 |
| Lys Ser Ser Asp Val Leu Gly Asn Leu Asn His Glu Tyr Val Leu Ala | |
| 465 470 475 | |
| gat atc acc acc tcc ttc act ctg ctg gtg ggg atc ttc ttt ccc tcg | 1488 |
| Asp Ile Thr Thr Ser Phe Thr Leu Leu Val Gly Ile Phe Phe Pro Ser | |
| 480 485 490 495 | |
| gtc aca ggt atc atg gct ggg tca aac aga tct gga gat ctg aaa gat | 1536 |
| Val Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp | |
| 500 505 510 | |
| gcc cag aag tct att ccc att ggg acc atc ctt gcc atc ctg acc aca | 1584 |
| Ala Gln Lys Ser Ile Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr Thr | |
| 515 520 525 | |

| | |
|---------------------------------------------------------------------|------|
| tcc ttt gtg tat tta agc aat gtt gtc ctt ttt ggt gca tgt att gaa | 1632 |
| Ser Phe Val Tyr Leu Ser Asn Val Val Leu Phe Gly Ala Cys Ile Glu | |
| 530 535 540 | |
| gga gtc gtt ctc aga gac aaa ttt ggg gat gct gta aaa ggg aat ttg | 1680 |
| Gly Val Val Leu Arg Asp Lys Phe Gly Asp Ala Val Lys Gly Asn Leu | |
| 545 550 555 | |
| gtt gta ggc acc tta tcc tgg cca tcc ccg tgg gtg atc gtt att ggc | 1728 |
| Val Val Gly Thr Leu Ser Trp Pro Ser Pro Trp Val Ile Val Ile Gly | |
| 560 565 570 575 | |
| tcc ttc ttt tca aca tgt ggg gct ggg ctg cag agc ctc aca ggt gcg | 1776 |
| Ser Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Ser Ser Leu Thr Gly Ala | |
| 580 585 590 | |
| cct cgg ctg ctg cag gct atc gcc aag gat aac atc ata cct ttc ctt | 1824 |
| Pro Arg Leu Leu Gln Ala Ile Ala Lys Asp Asn Ile Ile Pro Phe Leu | |
| 595 600 605 | |
| agg gtt ttt ggt cac agc aaa gct aat ggg gaa cct acc tgg gct tta | 1872 |
| Arg Val Phe Gly His Ser Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu | |
| 610 615 620 | |
| ctt cta act gct gcc ata gca gag ctg gga att ctc atc gcc tcc ctg | 1920 |
| Leu Leu Thr Ala Ala Ile Ala Glu Leu Gly Ile Leu Ile Ala Ser Leu | |
| 625 630 635 | |
| gat ctc gtg gcc cca att ctt tcc atg ttt ttt ctc atg tgt tac ctc | 1968 |
| Asp Leu Val Ala Pro Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu | |
| 640 645 650 655 | |
| ttt gtg aac ttg gct tgt gcc ttg caa aca ttg ctg cga acc ccc aac | 2016 |
| Phe Val Asn Leu Ala Cys Ala Leu Gln Thr Leu Leu Arg Thr Pro Asn | |
| 660 665 670 | |
| tgg agg cct cga ttc cgc tat tat cac tgg gcc ctc tct ttc atg gga | 2064 |
| Trp Arg Pro Arg Phe Arg Tyr Tyr His Trp Ala Leu Ser Phe Met Gly | |
| 675 680 685 | |
| atg agt atc tgt cta gct ctg atg ttc att tct tct tgg tat tat gcc | 2112 |
| Met Ser Ile Cys Leu Ala Leu Met Phe Ile Ser Ser Trp Tyr Tyr Ala | |
| 690 695 700 | |
| att gta gct atg gta ata gct ggc atg atc tac aag tac att gaa tat | 2160 |
| Ile Val Ala Met Val Ile Ala Gly Met Ile Tyr Lys Tyr Ile Glu Tyr | |
| 705 710 715 | |
| caa ggg gct gag aaa gaa tgg ggg gat ggt atc cgt ggg ctg tcg ctc | 2208 |
| Gln Gly Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu | |
| 720 725 730 735 | |
| agt gca gcc cgc ttc gct ttg ctc cgt cta gag gaa gga cct cct cac | 2256 |
| Ser Ala Ala Arg Phe Ala Leu Leu Arg Leu Glu Glu Gly Pro Pro His | |
| 740 745 750 | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| act | aaa | aac | tgg | agg | cct | cag | ctg | ctc | gtc | cta | ctg | aag | ctg | gat | gaa | 2304 |
| Thr | Lys | Asn | Trp | Arg | Pro | Gln | Leu | Leu | Val | Leu | Leu | Lys | Leu | Asp | Glu | |
| | | | 755 | | | | | 760 | | | | | 765 | | | |
| gat | tta | cac | gtc | aag | cac | cct | cgc | ctc | ctc | acc | ttt | gcc | tcc | cag | ctc | 2352 |
| Asp | Leu | His | Val | Lys | His | Pro | Arg | Leu | Leu | Thr | Phe | Ala | Ser | Gln | Leu | |
| | | | 770 | | | | | 775 | | | | | 780 | | | |
| aag | gca | gga | aag | gga | ctc | acg | att | gtg | ggc | tct | gtc | atc | gtg | ggg | aac | 2400 |
| Lys | Ala | Gly | Lys | Gly | Leu | Thr | Ile | Val | Gly | Ser | Val | Ile | Val | Gly | Asn | |
| | | | 785 | | | | | 790 | | | | | | | | |
| ttc | ttg | gag | aac | tat | ggc | gac | gcg | ctc | gcg | gca | gag | cag | acc | att | aag | 2448 |
| Phe | Leu | Glu | Asn | Tyr | Gly | Asp | Ala | Leu | Ala | Ala | Glu | Gln | Thr | Ile | Lys | |
| 800 | | | | | | 805 | | | | | 810 | | | | 815 | |
| cac | cta | atg | gag | gca | gaa | aag | gta | aaa | gga | ttc | tgc | caa | ttg | gtg | gtg | 2496 |
| His | Leu | Met | Glu | Ala | Glu | Lys | Val | Lys | Gly | Phe | Cys | Gln | Leu | Val | Val | |
| | | | | 820 | | | | | 825 | | | | | 830 | | |
| gct | gcc | aag | ctg | aaa | gag | ggc | att | tca | cac | ctc | atc | cag | tcc | tgt | ggc | 2544 |
| Ala | Ala | Lys | Leu | Lys | Glu | Gly | Ile | Ser | His | Leu | Ile | Gln | Ser | Cys | Gly | |
| | | | 835 | | | | | 840 | | | | | 845 | | | |
| ntc | gga | ggc | atg | aaa | cac | aac | aca | gtg | gtg | atg | ggc | tgg | ccc | aat | ggc | 2592 |
| Xaa | Gly | Gly | Met | Lys | His | Asn | Thr | Val | Val | Met | Gly | Trp | Pro | Asn | Gly | |
| | | | 850 | | | | | 855 | | | | | 860 | | | |
| tgg | cgt | cag | agt | gaa | gat | gct | cgc | gct | tgg | aag | act | ttc | att | ggc | aca | 2640 |
| Trp | Arg | Gln | Ser | Glu | Asp | Ala | Arg | Ala | Trp | Lys | Thr | Phe | Ile | Gly | Thr | |
| | | | 865 | | | | | 870 | | | | | | | | |
| gta | cga | gtg | aca | act | gct | gcc | cat | cta | gcc | ctg | ctg | gtg | gct | aaa | aat | 2688 |
| Val | Arg | Val | Thr | Thr | Ala | Ala | His | Leu | Ala | Leu | Leu | Val | Ala | Lys | Asn | |
| 880 | | | | | | 885 | | | | | 890 | | | | 895 | |
| gtc | tcc | ttc | ttt | ccc | agc | aat | gtg | gag | cag | ttt | tct | gag | ggc | aac | att | 2736 |
| Val | Ser | Phe | Phe | Pro | Ser | Asn | Val | Glu | Gln | Phe | Ser | Glu | Gly | Asn | Ile | |
| | | | | 900 | | | | | 905 | | | | | | 910 | |
| gat | gtg | cgg | tgg | att | gtg | cat | gat | ggg | ggc | atg | ctc | atg | cta | tta | ccg | 2784 |
| Asp | Val | Arg | Trp | Ile | Val | His | Asp | Gly | Gly | Met | Leu | Met | Leu | Leu | Pro | |
| | | | 915 | | | | | 920 | | | | | | 925 | | |
| ttc | ctg | ctg | aaa | cag | cac | aag | gtt | tgg | cgg | aaa | tgc | agc | ata | cgg | atc | 2832 |
| Phe | Leu | Leu | Lys | Gln | His | Lys | Val | Trp | Arg | Lys | Cys | Ser | Ile | Arg | Ile | |
| | | | 930 | | | | | 935 | | | | | 940 | | | |
| ttc | aca | gta | gcc | caa | cta | gaa | gac | aac | agt | atc | cag | atg | aag | aag | gat | 2880 |
| Phe | Thr | Val | Ala | Gln | Leu | Glu | Asp | Asn | Ser | Ile | Gln | Met | Lys | Lys | Asp | |
| | | | 945 | | | | | 950 | | | | | | | | |
| ctg | gcc | acc | ttt | ctg | tac | cac | ctg | cgc | att | gag | gca | gaa | gtg | gaa | gtg | 2928 |
| Leu | Ala | Thr | Phe | Leu | Tyr | His | Leu | Arg | Ile | Glu | Ala | Glu | Val | Glu | Val | |
| 960 | | | | | | 965 | | | | 970 | | | | | 975 | |

| | |
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| Val Glu Met His Asp Ser Asp Ile Ser Ala Tyr Thr Tyr Glu Arg Thr | |
| 980 985 990 | |
| ctg atg atg gag cag agg tcc cag atg ctt cgg cat atg cgg ctg tcc | 3024 |
| Leu Met Met Glu Gln Arg Ser Gln Met Leu Arg His Met Arg Leu Ser | |
| 995 1000 1005 | |
| aaa aca gag cga gac agg gag gca cag ctg gtg aaa gat cga aac tca | 3072 |
| Lys Thr Glu Arg Asp Arg Glu Ala Gln Leu Val Lys Asp Arg Asn Ser | |
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| atg cta cgc ttg acc agc att ggc tct gat gag gac gaa gag aca gaa | 3120 |
| Met Leu Arg Leu Thr Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr Glu | |
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| acg tac cag gag aag gtg cac atg act tgg acc aag gat aaa tac atg | 3168 |
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| gca tcc cgg ggg caa aag gtc aag tca atg gaa gga ttc cag gac cta | 3216 |
| Ala Ser Arg Gly Gln Lys Val Lys Ser Met Glu Gly Phe Gln Asp Leu | |
| 1060 1065 1070 | |
| ctt aat atg cgt ccg gac cag tcc aac gtg aga cgg atg cat aca gca | 3264 |
| Leu Asn Met Arg Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala | |
| 1075 1080 1085 | |
| gtg aag ctc aat gaa gtt ata gtc aac aag tct cat gaa gca aag ctg | 3312 |
| Val Lys Leu Asn Glu Val Ile Val Asn Lys Ser His Glu Ala Lys Leu | |
| 1090 1095 1100 | |
| gtt ttg ttg aat atg cca gga cca ccc cgg aac cct gaa ggt gat gaa | 3360 |
| Val Leu Leu Asn Met Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp Glu | |
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| aac tac atg gaa ttt cta gaa gtg ctc act gag gga tta gaa cga gtc | 3408 |
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 35 40 45
 Glu Ser Val Pro Glu Thr Ser Arg Ser Glu Pro Met Ser Glu Leu Ser
 50 55 60
 Gly Ala Thr Thr Ser Leu Ala Thr Val Ala Leu Asp Pro Ser Ser Asp
 65 70 75 80

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Thr | Ser | Asn | Pro | Gln | Asp | Val | Thr | Glu | Asp | Pro | Ser | Gln | Asn | Ser | 85 | 90 | 95 |
| Ile | Thr | Gly | Glu | His | Ser | Gln | Leu | Leu | Asp | Asp | Gly | His | Lys | Lys | Ala | 100 | 105 | 110 |
| Arg | Asn | Ala | Tyr | Leu | Asn | Asn | Ser | Asn | Tyr | Glu | Glu | Gly | Asp | Glu | Tyr | 115 | 120 | 125 |
| Phe | Asp | Lys | Asn | Leu | Ala | Leu | Phe | Glu | Glu | Glu | Met | Asp | Thr | Arg | Pro | 130 | 135 | 140 |
| Lys | Val | Ser | Ser | Leu | Leu | Asn | Arg | Met | Ala | Asn | Tyr | Thr | Asn | Leu | Thr | 145 | 150 | 155 |
| Gln | Gly | Ala | Lys | Glu | His | Glu | Glu | Ala | Glu | Asn | Ile | Thr | Glu | Gly | Lys | 165 | 170 | 175 |
| Lys | Lys | Pro | Thr | Lys | Ser | Pro | Gln | Met | Gly | Thr | Phe | Met | Gly | Val | Tyr | 180 | 185 | 190 |
| Leu | Pro | Cys | Leu | Gln | Asn | Ile | Phe | Gly | Val | Ile | Leu | Phe | Leu | Arg | Leu | 195 | 200 | 205 |
| Thr | Trp | Val | Val | Gly | Thr | Ala | Gly | Ile | Leu | Gln | Ala | Phe | Ala | Ile | Val | 210 | 215 | 220 |
| Leu | Ile | Cys | Cys | Cys | Cys | Thr | Met | Leu | Thr | Ala | Ile | Ser | Met | Ser | Ala | 225 | 230 | 235 |
| Ile | Ala | Thr | Asn | Gly | Val | Val | Pro | Ala | Gly | Gly | Ser | Tyr | Phe | Met | Ile | 245 | 250 | 255 |
| Ser | Arg | Ala | Leu | Gly | Pro | Glu | Phe | Gly | Gly | Ala | Val | Gly | Leu | Cys | Phe | 260 | 265 | 270 |
| Tyr | Leu | Gly | Thr | Thr | Phe | Ala | Ala | Ala | Met | Tyr | Ile | Leu | Gly | Ala | Ile | 275 | 280 | 285 |
| Glu | Ile | Phe | Leu | Val | Tyr | Ile | Val | Pro | Arg | Ala | Ala | Ile | Phe | Arg | Ser | 290 | 295 | 300 |
| Asp | Asp | Ala | Leu | Lys | Glu | Ser | Ala | Ala | Met | Leu | Asn | Asn | Met | Arg | Val | 305 | 310 | 315 |
| Tyr | Gly | Thr | Ala | Phe | Leu | Val | Leu | Met | Val | Leu | Val | Val | Phe | Ile | Gly | 325 | 330 | 335 |
| Val | Arg | Tyr | Val | Asn | Lys | Phe | Ala | Ser | Leu | Phe | Leu | Ala | Cys | Val | Ile | 340 | 345 | 350 |
| Val | Ser | Ile | Leu | Ala | Ile | Tyr | Ala | Gly | Ala | Ile | Lys | Ser | Ser | Phe | Ala | 355 | 360 | 365 |
| Pro | Pro | His | Phe | Pro | Val | Cys | Met | Leu | Gly | Asn | Arg | Thr | Leu | Ser | Ser | 370 | 375 | 380 |

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | His | Leu | Asp | Ile | Cys | Ser | Lys | Thr | Lys | Glu | Val | Asp | Asn | Met | Thr | 385 | 390 | 395 | 400 |
| Val | Pro | Ser | Lys | Leu | Trp | Gly | Phe | Phe | Cys | Asn | Ser | Ser | Gln | Phe | Phe | 405 | 410 | | 415 |
| Asn | Ala | Thr | Cys | Asp | Glu | Tyr | Phe | Val | His | Asn | Asn | Val | Ile | Ser | Ile | 420 | 425 | | 430 |
| Gln | Gly | Ile | Pro | Gly | Leu | Ala | Ser | Gly | Ile | Ile | Thr | Glu | Asn | Leu | Trp | 435 | 440 | | 445 |
| Ser | Asn | Tyr | Leu | Pro | Lys | Gly | Glu | Ile | Ile | Glu | Lys | Pro | Ser | Ala | Lys | 450 | 455 | | 460 |
| Ser | Ser | Asp | Val | Leu | Gly | Asn | Leu | Asn | His | Glu | Tyr | Val | Leu | Ala | Asp | 465 | 470 | | 480 |
| Ile | Thr | Thr | Ser | Phe | Thr | Leu | Leu | Val | Gly | Ile | Phe | Phe | Pro | Ser | Val | 485 | 490 | | 495 |
| Thr | Gly | Ile | Met | Ala | Gly | Ser | Asn | Arg | Ser | Gly | Asp | Leu | Lys | Asp | Ala | 500 | 505 | | 510 |
| Gln | Lys | Ser | Ile | Pro | Ile | Gly | Thr | Ile | Leu | Ala | Ile | Leu | Thr | Thr | Ser | 515 | 520 | | 525 |
| Phe | Val | Tyr | Leu | Ser | Asn | Val | Val | Leu | Phe | Gly | Ala | Cys | Ile | Glu | Gly | 530 | 535 | | 540 |
| Val | Val | Leu | Arg | Asp | Lys | Phe | Gly | Asp | Ala | Val | Lys | Gly | Asn | Leu | Val | 545 | 550 | | 560 |
| Val | Gly | Thr | Leu | Ser | Trp | Pro | Ser | Pro | Trp | Val | Ile | Val | Ile | Gly | Ser | 565 | 570 | | 575 |
| Phe | Phe | Ser | Thr | Cys | Gly | Ala | Gly | Leu | Gln | Ser | Leu | Thr | Gly | Ala | Pro | 580 | 585 | | 590 |
| Arg | Leu | Leu | Gln | Ala | Ile | Ala | Lys | Asp | Asn | Ile | Ile | Pro | Phe | Leu | Arg | 595 | 600 | | 605 |
| Val | Phe | Gly | His | Ser | Lys | Ala | Asn | Gly | Glu | Pro | Thr | Trp | Ala | Leu | Leu | 610 | 615 | | 620 |
| Leu | Thr | Ala | Ala | Ile | Ala | Glu | Leu | Gly | Ile | Leu | Ile | Ala | Ser | Leu | Asp | 625 | 630 | | 640 |
| Leu | Val | Ala | Pro | Ile | Leu | Ser | Met | Phe | Phe | Leu | Met | Cys | Tyr | Leu | Phe | 645 | 650 | | 655 |
| Val | Asn | Leu | Ala | Cys | Ala | Leu | Gln | Thr | Leu | Leu | Arg | Thr | Pro | Asn | Trp | 660 | 665 | | 670 |
| Arg | Pro | Arg | Phe | Arg | Tyr | Tyr | His | Trp | Ala | Leu | Ser | Phe | Met | Gly | Met | 675 | 680 | | 685 |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Ile | Cys | Leu | Ala | Leu | Met | Phe | Ile | Ser | Ser | Trp | Tyr | Tyr | Ala | Ile | 690 | 695 | 700 |
| Val | Ala | Met | Val | Ile | Ala | Gly | Met | Ile | Tyr | Lys | Tyr | Ile | Glu | Tyr | Gln | 705 | 710 | 715 |
| Gly | Ala | Glu | Lys | Glu | Trp | Gly | Asp | Gly | Ile | Arg | Gly | Leu | Ser | Leu | Ser | 725 | 730 | 735 |
| Ala | Ala | Arg | Phe | Ala | Leu | Leu | Arg | Leu | Glu | Glu | Gly | Pro | Pro | His | Thr | 740 | 745 | 750 |
| Lys | Asn | Trp | Arg | Pro | Gln | Leu | Leu | Val | Leu | Leu | Lys | Leu | Asp | Glu | Asp | 755 | 760 | 765 |
| Leu | His | Val | Lys | His | Pro | Arg | Leu | Leu | Thr | Phe | Ala | Ser | Gln | Leu | Lys | 770 | 775 | 780 |
| Ala | Gly | Lys | Gly | Leu | Thr | Ile | Val | Gly | Ser | Val | Ile | Val | Gly | Asn | Phe | 785 | 790 | 795 |
| Leu | Glu | Asn | Tyr | Gly | Asp | Ala | Leu | Ala | Ala | Glu | Gln | Thr | Ile | Lys | His | 805 | 810 | 815 |
| Leu | Met | Glu | Ala | Glu | Lys | Val | Lys | Gly | Phe | Cys | Gln | Leu | Val | Val | Ala | 820 | 825 | 830 |
| Ala | Lys | Leu | Lys | Glu | Gly | Ile | Ser | His | Leu | Ile | Gln | Ser | Cys | Gly | Leu | 835 | 840 | 845 |
| Gly | Gly | Met | Lys | His | Asn | Thr | Val | Val | Met | Gly | Trp | Pro | Asn | Gly | Trp | 850 | 855 | 860 |
| Arg | Gln | Ser | Glu | Asp | Ala | Arg | Ala | Trp | Lys | Thr | Phe | Ile | Gly | Thr | Val | 865 | 870 | 875 |
| Arg | Val | Thr | Thr | Ala | Ala | His | Leu | Ala | Leu | Leu | Val | Ala | Lys | Asn | Val | 885 | 890 | 895 |
| Ser | Phe | Phe | Pro | Ser | Asn | Val | Glu | Gln | Phe | Ser | Glu | Gly | Asn | Ile | Asp | 900 | 905 | 910 |
| Val | Arg | Trp | Ile | Val | His | Asp | Gly | Gly | Met | Leu | Met | Leu | Leu | Pro | Phe | 915 | 920 | 925 |
| Leu | Leu | Lys | Gln | His | Lys | Val | Trp | Arg | Lys | Cys | Ser | Ile | Arg | Ile | Phe | 930 | 935 | 940 |
| Thr | Val | Ala | Gln | Leu | Glu | Asp | Asn | Ser | Ile | Gln | Met | Lys | Lys | Asp | Leu | 945 | 950 | 955 |
| Ala | Thr | Phe | Leu | Tyr | His | Leu | Arg | Ile | Glu | Ala | Glu | Val | Glu | Val | Val | 965 | 970 | 975 |
| Glu | Met | His | Asp | Ser | Asp | Ile | Ser | Ala | Tyr | Thr | Tyr | Glu | Arg | Thr | Leu | 980 | 985 | 990 |

Met Met Glu Gln Arg Ser Gln Met Leu Arg His Met Arg Leu Ser Lys
 995 1000 1005
 Thr Glu Arg Asp Arg Glu Ala Gln Leu Val Lys Asp Arg Asn Ser Met
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 Leu Arg Leu Thr Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr Glu Thr
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 1105 1110 1115 1120
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| Gly His Lys Lys Ala Arg Asn Ala Tyr Xaa Asn Asn Ser Asn Tyr Glu | |
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| tat aca aat ctg aca caa gga gca aag gaa cat gaa gag gca gag aac | 448 |
| Tyr Thr Asn Leu Thr Gln Gly Ala Lys Glu His Glu Glu Ala Glu Asn | |
| 105 110 115 120 | |
| atc act gaa ggg aaa aag aag cct acc aag agc ccc caa atg ggt act | 496 |
| Ile Thr Glu Gly Lys Lys Lys Pro Thr Lys Ser Pro Gln Met Gly Thr | |
| 125 130 135 | |
| ttc atg ggt gtc tac ctc cca tgt cta cag aac atc ttt gga gtg atc | 544 |
| Phe Met Gly Val Tyr Leu Pro Cys Leu Gln Asn Ile Phe Gly Val Ile | |
| 140 145 150 | |
| ctc ttc ctg cgt ctt acc tgg gta gtg gga aca gct gga atc ctt cag | 592 |
| Leu Phe Leu Arg Leu Thr Trp Val Val Gly Thr Ala Gly Ile Leu Gln | |
| 155 160 165 | |
| gcc ttt gca att gtc ctc atc tgc tgc tgc tgt aca atg tta act gcc | 640 |
| Ala Phe Ala Ile Val Leu Ile Cys Cys Cys Cys Thr Met Leu Thr Ala | |
| 170 175 180 | |
| atc tcc atg agc gcc atc gcc act aac gga gtg gtg cca gct ggg ggc | 688 |
| Ile Ser Met Ser Ala Ile Ala Thr Asn Gly Val Val Pro Ala Gly Gly | |
| 185 190 195 200 | |
| tca tac ttc atg att tcc aga gcc ctg ggc cca gag ttt ggc ggg gct | 736 |
| Ser Tyr Phe Met Ile Ser Arg Ala Leu Gly Pro Glu Phe Gly Gly Ala | |
| 205 210 215 | |

| | |
|-----------------------------------------------------------------|------|
| gta ggc ctc tgc ttt tat ctt ggc acc aca ttt gca gca gcc atg tat | 784 |
| Val Gly Leu Cys Phe Tyr Leu Gly Thr Thr Phe Ala Ala Ala Met Tyr | |
| 220 225 230 | |
| att ctt ggt gcc att gaa atc ttt ctg gta tac att gtc ccc cga gct | 832 |
| Ile Leu Gly Ala Ile Glu Ile Phe Leu Val Tyr Ile Val Pro Arg Ala | |
| 235 240 245 | |
| gcc atc ttt cgg agt gac gat gca ctc aag gag tca gca gct atg ctg | 880 |
| Ala Ile Phe Arg Ser Asp Asp Ala Leu Lys Glu Ser Ala Ala Met Leu | |
| 250 255 260 | |
| aac aac atg cgc gtc tat ggt aca gcc ttc ttg gtc ctc atg gtc ttg | 928 |
| Asn Asn Met Arg Val Tyr Gly Thr Ala Phe Leu Val Leu Met Val Leu | |
| 265 270 275 280 | |
| gtg gta ttc atc ggc gta cgc tat gtg aat aag ttt gcc tca ctc ttc | 976 |
| Val Val Phe Ile Gly Val Arg Tyr Val Asn Lys Phe Ala Ser Leu Phe | |
| 285 290 295 | |
| ctg gcc tgt gta att gtg tcg atc ttg gct atc tat gct ggt gcc atc | 1024 |
| Leu Ala Cys Val Ile Val Ser Ile Leu Ala Ile Tyr Ala Gly Ala Ile | |
| 300 305 310 | |
| aag tct tcc ttt gct cca cca cac ttc ccg gtc tgt atg ctg ggc aac | 1072 |
| Lys Ser Ser Phe Ala Pro Pro His Phe Pro Val Cys Met Leu Gly Asn | |
| 315 320 325 | |
| cgt acc ctg tca tca aga cac ctt gac att tgc tct aag acc aag gag | 1120 |
| Arg Thr Leu Ser Ser Arg His Leu Asp Ile Cys Ser Lys Thr Lys Glu | |
| 330 335 340 | |
| gtt gac aac atg aca gta cca tca aag tta tgg gga ttc ttc tgc aac | 1168 |
| Val Asp Asn Met Thr Val Pro Ser Lys Leu Trp Gly Phe Phe Cys Asn | |
| 345 350 355 360 | |
| tcg agt cag ttc ttt aat gcc acc tgt gat gag tac ttt gtt cac aat | 1216 |
| Ser Ser Gln Phe Phe Asn Ala Thr Cys Asp Glu Tyr Phe Val His Asn | |
| 365 370 375 | |
| aac gtc atc tca atc caa ggc att cca ggg ttg gct agt ggt atc att | 1264 |
| Asn Val Ile Ser Ile Gln Gly Ile Pro Gly Leu Ala Ser Gly Ile Ile | |
| 380 385 390 | |
| act gaa aat ctt tgg agt aat tat tta cca aag ggt gag ata att gaa | 1312 |
| Thr Glu Asn Leu Trp Ser Asn Tyr Leu Pro Lys Gly Glu Ile Ile Glu | |
| 395 400 405 | |
| aag cca tca gcc aag tca tct gat gtc tta ggc aac tta aac cat gaa | 1360 |
| Lys Pro Ser Ala Lys Ser Ser Asp Val Leu Gly Asn Leu Asn His Glu | |
| 410 415 420 | |
| tat gtt ctt gct gat atc acc acc tcc ttc act ctg ctg gtg ggg atc | 1408 |
| Tyr Val Leu Ala Asp Ile Thr Thr Ser Phe Thr Leu Leu Val Gly Ile | |
| 425 430 435 440 | |

| | |
|-----------------------------------------------------------------|------|
| ttc ttt ccc tcg gtc aca ggt atc atg gct ggg tca aac aga tct gga | 1456 |
| Phe Phe Pro Ser Val Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly | |
| 445 450 455 | |
| gat ctg aaa gat gcc cag aag tct att ccc att ggg acc atc ctt gcc | 1504 |
| Asp Leu Lys Asp Ala Gln Lys Ser Ile Pro Ile Gly Thr Ile Leu Ala | |
| 460 465 470 | |
| atc ctg acc aca tcc ttt gtg tat tta agc aat gtt gtc ctt ttt ggt | 1552 |
| Ile Leu Thr Thr Ser Phe Val Tyr Leu Ser Asn Val Val Leu Phe Gly | |
| 475 480 485 | |
| gca tgt att gaa gga gtc gtt ctc aga gac aaa ttt ggg gat gct gta | 1600 |
| Ala Cys Ile Glu Gly Val Val Leu Arg Asp Lys Phe Gly Asp Ala Val | |
| 490 495 500 | |
| aaa ggg aat ttg gtt gta ggc acc tta tcc tgg cca tcc ccg tgg gtg | 1648 |
| Lys Gly Asn Leu Val Val Gly Thr Leu Ser Trp Pro Ser Pro Trp Val | |
| 505 510 515 520 | |
| atc gtt att ggc tcc ttc ttt tca aca tgt ggg gct ggg ctg cag agc | 1696 |
| Ile Val Ile Gly Ser Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Ser | |
| 525 530 535 | |
| ntc aca ggt gcg cct cgg ctg ctg cag gct atc gcc aag gat aac atc | 1744 |
| Xaa Thr Gly Ala Pro Arg Leu Leu Gln Ala Ile Ala Lys Asp Asn Ile | |
| 540 545 550 | |
| ata cct ttc ctt agg gtt ttt ggt cac agc aaa gct aat ggg gaa cct | 1792 |
| Ile Pro Phe Leu Arg Val Phe Gly His Ser Lys Ala Asn Gly Glu Pro | |
| 555 560 565 | |
| acc tgg gct tta ctt cta act gct gcc ata gca gag ctg gga att ctc | 1840 |
| Thr Trp Ala Leu Leu Leu Thr Ala Ala Ile Ala Glu Leu Gly Ile Leu | |
| 570 575 580 | |
| atc gcc tcc ctg gat ctc gtg gcc cca att ctt tcc atg ttt ttt ctc | 1888 |
| Ile Ala Ser Leu Asp Leu Val Ala Pro Ile Leu Ser Met Phe Phe Leu | |
| 585 590 595 600 | |
| atg tgt tac ctc ttt gtg aac ttg gct tgt gcc ttg caa aca ttg ctg | 1936 |
| Met Cys Tyr Leu Phe Val Asn Leu Ala Cys Ala Leu Gln Thr Leu Leu | |
| 605 610 615 | |
| cga acc ccc aac tgg agg cct cga ttc cgc tat tat cac tgg gcc ctc | 1984 |
| Arg Thr Pro Asn Trp Arg Pro Arg Phe Arg Tyr Tyr His Trp Ala Leu | |
| 620 625 630 | |
| tct ttc atg gga atg agt atc tgt cta gct ctg atg ttc att tct tct | 2032 |
| Ser Phe Met Gly Met Ser Ile Cys Leu Ala Leu Met Phe Ile Ser Ser | |
| 635 640 645 | |
| tgg tat tat gcc att gta gct atg gta ata gct ggc atg atc tac aag | 2080 |
| Trp Tyr Tyr Ala Ile Val Ala Met Val Ile Ala Gly Met Ile Tyr Lys | |
| 650 655 660 | |
| tac att gaa tat caa ggg gct gag aaa gaa tgg ggg gat ggt atc cgt | 2128 |

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Tyr | Ile | Glu | Tyr | Gln | Gly | Ala | Glu | Lys | Glu | Trp | Gly | Asp | Gly | Ile | Arg | | |
| 665 | | | | | 670 | | | | | 675 | | | | | 680 | | |
| ggg | ctg | tcg | ctc | agt | gca | gcc | cgc | ttc | gct | ttg | ctc | cgt | cta | gag | gaa | 2176 | |
| Gly | Leu | Ser | Leu | Ser | Ala | Ala | Arg | Phe | Ala | Leu | Leu | Arg | Leu | Glu | Glu | | |
| | | | | 685 | | | | | 690 | | | | | 695 | | | |
| gga | cct | cct | cac | act | aaa | aac | tgg | agg | cct | cag | ctg | ctc | gtc | cta | ctg | 2224 | |
| Gly | Pro | Pro | His | Thr | Lys | Asn | Trp | Arg | Pro | Gln | Leu | Leu | Val | Leu | Leu | | |
| | | | 700 | | | | | 705 | | | | | 710 | | | | |
| aag | ctg | gat | gaa | gat | tta | cac | gtc | aag | cac | cct | cgc | ctc | ctc | acc | ttt | 2272 | |
| Lys | Leu | Asp | Glu | Asp | Leu | His | Val | Lys | His | Pro | Arg | Leu | Leu | Thr | Phe | | |
| | | 715 | | | | | 720 | | | | | 725 | | | | | |
| gcc | tcc | cag | ctc | aag | gca | gga | aag | gga | ctc | acg | att | gtg | ggc | tct | gtc | 2320 | |
| Ala | Ser | Gln | Leu | Lys | Ala | Gly | Lys | Gly | Leu | Thr | Ile | Val | Gly | Ser | Val | | |
| | 730 | | | | | 735 | | | | | 740 | | | | | | |
| atc | gtg | ggg | aac | ttc | ttg | gag | aac | tat | ggt | gac | gcg | ctc | gcg | gca | gag | 2368 | |
| Ile | Val | Gly | Asn | Phe | Leu | Glu | Asn | Tyr | Gly | Asp | Ala | Leu | Ala | Ala | Glu | | |
| 745 | | | | | 750 | | | | | 755 | | | | | 760 | | |
| cag | acc | att | aag | cac | cta | atg | gag | gca | gaa | aag | gta | aaa | gga | ttc | tgc | 2416 | |
| Gln | Thr | Ile | Lys | His | Leu | Met | Glu | Ala | Glu | Lys | Val | Lys | Gly | Phe | Cys | | |
| | | | | 765 | | | | | 770 | | | | | 775 | | | |
| caa | ttg | gtg | gtg | gct | gcc | aag | ctg | aaa | gag | ggc | att | tca | cac | ctc | atc | 2464 | |
| Gln | Leu | Val | Val | Ala | Ala | Lys | Leu | Lys | Glu | Gly | Ile | Ser | His | Leu | Ile | | |
| | | | 780 | | | | | 785 | | | | | 790 | | | | |
| cag | tcc | tgt | ggc | ctc | gga | ggc | atg | aaa | cac | aac | aca | gtg | gtg | atg | ggc | 2512 | |
| Gln | Ser | Cys | Gly | Leu | Gly | Gly | Met | Lys | His | Asn | Thr | Val | Val | Met | Gly | | |
| | | 795 | | | | | 800 | | | | | 805 | | | | | |
| tgg | ccc | aat | ggc | tgg | cgt | cag | agt | gaa | gat | gct | cgc | gct | tgg | aag | act | 2560 | |
| Trp | Pro | Asn | Gly | Trp | Arg | Gln | Ser | Glu | Asp | Ala | Arg | Ala | Trp | Lys | Thr | | |
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| ttc | att | ggc | aca | gta | cga | gtg | aca | act | gct | gcc | cat | cta | gcc | ctg | ctg | 2608 | |
| Phe | Ile | Gly | Thr | Val | Arg | Val | Thr | Thr | Ala | Ala | His | Leu | Ala | Leu | Leu | | |
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| Val | Ala | Lys | Asn | Val | Ser | Phe | Phe | Pro | Ser | Asn | Val | Glu | Gln | Phe | Ser | | |
| | | | | 845 | | | | | 850 | | | | | 855 | | | |
| gag | ggc | aac | att | gat | gtg | cgg | tgg | att | gtg | cat | gat | ggg | ggc | atg | ctc | 2704 | |
| Glu | Gly | Asn | Ile | Asp | Val | Arg | Trp | Ile | Val | His | Asp | Gly | Gly | Met | Leu | | |
| | | | 860 | | | | | 865 | | | | | 870 | | | | |
| atg | cta | tta | ccg | ttc | ctg | ctg | aaa | cag | cac | aag | gtt | tgg | cgg | aaa | tgc | 2752 | |
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| | | | 875 | | | | 880 | | | | | 885 | | | | | |

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| agc ata cgg atc ttc aca gta gcc caa cta gaa gac aac agt atc cag | 2800 |
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| 890 895 900 | |
| atg aag aag gat ctg gcc acc ttt ctg tac cac ctg cgc att gag gca | 2848 |
| Met Lys Lys Asp Leu Ala Thr Phe Leu Tyr His Leu Arg Ile Glu Ala | |
| 905 910 915 920 | |
| gaa gtg gaa gtg gtg gag atg cac gac agt gac ata tct gcc tat aca | 2896 |
| Glu Val Glu Val Val Glu Met His Asp Ser Asp Ile Ser Ala Tyr Thr | |
| 925 930 935 | |
| tat gag cgc acc ctg atg atg gag cag agg tcc cag atg ctt cgg cat | 2944 |
| Tyr Glu Arg Thr Leu Met Met Glu Gln Arg Ser Gln Met Leu Arg His | |
| 940 945 950 | |
| atg cgg ctg tcc aaa aca gag cga gac agg gag gca cag ctg gtg aaa | 2992 |
| Met Arg Leu Ser Lys Thr Glu Arg Asp Arg Glu Ala Gln Leu Val Lys | |
| 955 960 965 | |
| gat cga aac tca atg nta cgc ttg acc agc att ggc tct gat gag gac | 3040 |
| Asp Arg Asn Ser Met Xaa Arg Leu Thr Ser Ile Gly Ser Asp Glu Asp | |
| 970 975 980 | |
| gaa gag aca gaa acg tac cag gag aag gtg cac atg act tgg acc aag | 3088 |
| Glu Glu Thr Glu Thr Tyr Gln Glu Lys Val His Met Thr Trp Thr Lys | |
| 985 990 995 1000 | |
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| Asp Lys Tyr Met Ala Ser Arg Gly Gln Lys Val Lys Ser Met Glu Gly | |
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| ttc cag gac cta ctt aat atg cgt ccg gac cag tcc aac gtg aga cgg | 3184 |
| Phe Gln Asp Leu Leu Asn Met Arg Pro Asp Gln Ser Asn Val Arg Arg | |
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| atg cat aca gca gtg aag ctc aat gaa gtt ata gtc aac aag tct cat | 3232 |
| Met His Thr Ala Val Lys Leu Asn Glu Val Ile Val Asn Lys Ser His | |
| 1035 1040 1045 | |
| gaa gca aag ctg gtt ttg ttg aat atg cca gga cca ccc cgg aac cct | 3280 |
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| 1050 1055 1060 | |
| gaa ggt gat gaa aac tac atg gaa ttt cta gaa gtg ctc act gag gga | 3328 |
| Glu Gly Asp Glu Asn Tyr Met Glu Phe Leu Glu Val Leu Thr Glu Gly | |
| 1065 1070 1075 1080 | |
| tta gaa cga gtc ctt ctt gtc cgg ggt ggt ggc agt gag gtc atc acc | 3376 |
| Leu Glu Arg Val Leu Leu Val Arg Gly Gly Gly Ser Glu Val Ile Thr | |
| 1085 1090 1095 | |
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| Ile Tyr Ser | |
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 1 5 10 15
 Ala Gly Pro Leu Ser Pro Glu Pro Ser Ser Ala Glu Val Lys Ala Arg
 20 25 30

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Gln | Asp | Pro | Gln | Glu | Pro | Asp | Pro | Ser | Gln | Asn | Ser | Ile | Thr | Gly |
| | | 35 | | | | | 40 | | | | 45 | | | | |
| Glu | His | Ser | Gln | Leu | Leu | Asp | Asp | Gly | His | Lys | Lys | Ala | Arg | Asn | Ala |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Tyr | Xaa | Asn | Asn | Ser | Asn | Tyr | Glu | Glu | Gly | Asp | Glu | Tyr | Phe | Asp | Lys |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| Asn | Leu | Ala | Leu | Phe | Glu | Glu | Glu | Met | Asp | Thr | Arg | Pro | Lys | Val | Ser |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Ser | Leu | Leu | Asn | Arg | Met | Ala | Asn | Tyr | Thr | Asn | Leu | Thr | Gln | Gly | Ala |
| | | | 100 | | | | 105 | | | | | | 110 | | |
| Lys | Glu | His | Glu | Glu | Ala | Glu | Asn | Ile | Thr | Glu | Gly | Lys | Lys | Lys | Pro |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| Thr | Lys | Ser | Pro | Gln | Met | Gly | Thr | Phe | Met | Gly | Val | Tyr | Leu | Pro | Cys |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Leu | Gln | Asn | Ile | Phe | Gly | Val | Ile | Leu | Phe | Leu | Arg | Leu | Thr | Trp | Val |
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| Cys | Cys | Cys | Thr | Met | Leu | Thr | Ala | Ile | Ser | Met | Ser | Ala | Ile | Ala | Thr |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Asn | Gly | Val | Val | Pro | Ala | Gly | Gly | Ser | Tyr | Phe | Met | Ile | Ser | Arg | Ala |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Leu | Gly | Pro | Glu | Phe | Gly | Gly | Ala | Val | Gly | Leu | Cys | Phe | Tyr | Leu | Gly |
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| Thr | Thr | Phe | Ala | Ala | Ala | Met | Tyr | Ile | Leu | Gly | Ala | Ile | Glu | Ile | Phe |
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| | | | 260 | | | | 265 | | | | | | 270 | | |
| Ala | Phe | Leu | Val | Leu | Met | Val | Leu | Val | Val | Phe | Ile | Gly | Val | Arg | Tyr |
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| Leu | Ala | Ile | Tyr | Ala | Gly | Ala | Ile | Lys | Ser | Ser | Phe | Ala | Pro | Pro | His |
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| | | | | 325 | | | | | 330 | | | | | 335 | |

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| Asp | Ile | Cys | Ser | Lys | Thr | Lys | Glu | Val | Asp | Asn | Met | Thr | Val | Pro | Ser | | |
| | | | 340 | | | | | 345 | | | | | 350 | | | | |
| Lys | Leu | Trp | Gly | Phe | Phe | Cys | Asn | Ser | Ser | Gln | Phe | Phe | Asn | Ala | Thr | | |
| | | 355 | | | | | 360 | | | | | | 365 | | | | |
| Cys | Asp | Glu | Tyr | Phe | Val | His | Asn | Asn | Val | Ile | Ser | Ile | Gln | Gly | Ile | | |
| | 370 | | | | | 375 | | | | | 380 | | | | | | |
| Pro | Gly | Leu | Ala | Ser | Gly | Ile | Ile | Thr | Glu | Asn | Leu | Trp | Ser | Asn | Tyr | | |
| | 385 | | | | 390 | | | | | 395 | | | | | 400 | | |
| Leu | Pro | Lys | Gly | Glu | Ile | Ile | Glu | Lys | Pro | Ser | Ala | Lys | Ser | Ser | Asp | | |
| | | | 405 | | | | | | 410 | | | | | 415 | | | |
| Val | Leu | Gly | Asn | Leu | Asn | His | Glu | Tyr | Val | Leu | Ala | Asp | Ile | Thr | Thr | | |
| | | | 420 | | | | | 425 | | | | | 430 | | | | |
| Ser | Phe | Thr | Leu | Leu | Val | Gly | Ile | Phe | Phe | Pro | Ser | Val | Thr | Gly | Ile | | |
| | | 435 | | | | | 440 | | | | | 445 | | | | | |
| Met | Ala | Gly | Ser | Asn | Arg | Ser | Gly | Asp | Leu | Lys | Asp | Ala | Gln | Lys | Ser | | |
| | 450 | | | | | 455 | | | | | 460 | | | | | | |
| Ile | Pro | Ile | Gly | Thr | Ile | Leu | Ala | Ile | Leu | Thr | Thr | Ser | Phe | Val | Tyr | | |
| | 465 | | | | 470 | | | | | 475 | | | | | 480 | | |
| Leu | Ser | Asn | Val | Val | Leu | Phe | Gly | Ala | Cys | Ile | Glu | Gly | Val | Val | Leu | | |
| | | | 485 | | | | | 490 | | | | | | 495 | | | |
| Arg | Asp | Lys | Phe | Gly | Asp | Ala | Val | Lys | Gly | Asn | Leu | Val | Val | Gly | Thr | | |
| | | | 500 | | | | | 505 | | | | | 510 | | | | |
| Leu | Ser | Trp | Pro | Ser | Pro | Trp | Val | Ile | Val | Ile | Gly | Ser | Phe | Phe | Ser | | |
| | | 515 | | | | | 520 | | | | | 525 | | | | | |
| Thr | Cys | Gly | Ala | Gly | Leu | Gln | Ser | Xaa | Thr | Gly | Ala | Pro | Arg | Leu | Leu | | |
| | 530 | | | | | 535 | | | | | 540 | | | | | | |
| Gln | Ala | Ile | Ala | Lys | Asp | Asn | Ile | Ile | Pro | Phe | Leu | Arg | Val | Phe | Gly | | |
| | 545 | | | | 550 | | | | | 555 | | | | | 560 | | |
| His | Ser | Lys | Ala | Asn | Gly | Glu | Pro | Thr | Trp | Ala | Leu | Leu | Leu | Thr | Ala | | |
| | | | 565 | | | | | | 570 | | | | | 575 | | | |
| Ala | Ile | Ala | Glu | Leu | Gly | Ile | Leu | Ile | Ala | Ser | Leu | Asp | Leu | Val | Ala | | |
| | | | 580 | | | | 585 | | | | | | 590 | | | | |
| Pro | Ile | Leu | Ser | Met | Phe | Phe | Leu | Met | Cys | Tyr | Leu | Phe | Val | Asn | Leu | | |
| | | 595 | | | | | 600 | | | | | 605 | | | | | |
| Ala | Cys | Ala | Leu | Gln | Thr | Leu | Leu | Arg | Thr | Pro | Asn | Trp | Arg | Pro | Arg | | |
| | 610 | | | | | 615 | | | | | 620 | | | | | | |
| Phe | Arg | Tyr | Tyr | His | Trp | Ala | Leu | Ser | Phe | Met | Gly | Met | Ser | Ile | Cys | | |
| | 625 | | | | 630 | | | | | 635 | | | | | 640 | | |

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Ala | Leu | Met | Phe | Ile | Ser | Ser | Trp | Tyr | Tyr | Ala | Ile | Val | Ala | Met | 645 | 650 | 655 |
| Val | Ile | Ala | Gly | Met | Ile | Tyr | Lys | Tyr | Ile | Glu | Tyr | Gln | Gly | Ala | Glu | 660 | 665 | 670 |
| Lys | Glu | Trp | Gly | Asp | Gly | Ile | Arg | Gly | Leu | Ser | Leu | Ser | Ala | Ala | Arg | 675 | 680 | 685 |
| Phe | Ala | Leu | Leu | Arg | Leu | Glu | Glu | Gly | Pro | Pro | His | Thr | Lys | Asn | Trp | 690 | 695 | 700 |
| Arg | Pro | Gln | Leu | Leu | Val | Leu | Leu | Lys | Leu | Asp | Glu | Asp | Leu | His | Val | 705 | 710 | 715 |
| Lys | His | Pro | Arg | Leu | Leu | Thr | Phe | Ala | Ser | Gln | Leu | Lys | Ala | Gly | Lys | 725 | 730 | 735 |
| Gly | Leu | Thr | Ile | Val | Gly | Ser | Val | Ile | Val | Gly | Asn | Phe | Leu | Glu | Asn | 740 | 745 | 750 |
| Tyr | Gly | Asp | Ala | Leu | Ala | Ala | Glu | Gln | Thr | Ile | Lys | His | Leu | Met | Glu | 755 | 760 | 765 |
| Ala | Glu | Lys | Val | Lys | Gly | Phe | Cys | Gln | Leu | Val | Val | Ala | Ala | Lys | Leu | 770 | 775 | 780 |
| Lys | Glu | Gly | Ile | Ser | His | Leu | Ile | Gln | Ser | Cys | Gly | Leu | Gly | Gly | Met | 785 | 790 | 795 |
| Lys | His | Asn | Thr | Val | Val | Met | Gly | Trp | Pro | Asn | Gly | Trp | Arg | Gln | Ser | 805 | 810 | 815 |
| Glu | Asp | Ala | Arg | Ala | Trp | Lys | Thr | Phe | Ile | Gly | Thr | Val | Arg | Val | Thr | 820 | 825 | 830 |
| Thr | Ala | Ala | His | Leu | Ala | Leu | Leu | Val | Ala | Lys | Asn | Val | Ser | Phe | Phe | 835 | 840 | 845 |
| Pro | Ser | Asn | Val | Glu | Gln | Phe | Ser | Glu | Gly | Asn | Ile | Asp | Val | Arg | Trp | 850 | 855 | 860 |
| Ile | Val | His | Asp | Gly | Gly | Met | Leu | Met | Leu | Leu | Pro | Phe | Leu | Leu | Lys | 865 | 870 | 875 |
| Gln | His | Lys | Val | Trp | Arg | Lys | Cys | Ser | Ile | Arg | Ile | Phe | Thr | Val | Ala | 885 | 890 | 895 |
| Gln | Leu | Glu | Asp | Asn | Ser | Ile | Gln | Met | Lys | Lys | Asp | Leu | Ala | Thr | Phe | 900 | 905 | 910 |
| Leu | Tyr | His | Leu | Arg | Ile | Glu | Ala | Glu | Val | Glu | Val | Val | Glu | Met | His | 915 | 920 | 925 |
| Asp | Ser | Asp | Ile | Ser | Ala | Tyr | Thr | Tyr | Glu | Arg | Thr | Leu | Met | Met | Glu | 930 | 935 | 940 |

Gln Arg Ser Gln Met Leu Arg His Met Arg Leu Ser Lys Thr Glu Arg
 945 950 955 960
 Asp Arg Glu Ala Gln Leu Val Lys Asp Arg Asn Ser Met Xaa Arg Leu
 965 970 975
 Thr Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr Glu Thr Tyr Gln Glu
 980 985 990
 Lys Val His Met Thr Trp Thr Lys Asp Lys Tyr Met Ala Ser Arg Gly
 995 1000 1005
 Gln Lys Val Lys Ser Met Glu Gly Phe Gln Asp Leu Leu Asn Met Arg
 1010 1015 1020
 Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val Lys Leu Asn
 1025 1030 1035 1040
 Glu Val Ile Val Asn Lys Ser His Glu Ala Lys Leu Val Leu Leu Asn
 1045 1050 1055
 Met Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp Glu Asn Tyr Met Glu
 1060 1065 1070
 Phe Leu Glu Val Leu Thr Glu Gly Leu Glu Arg Val Leu Leu Val Arg
 1075 1080 1085
 Gly Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser
 1090 1095

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| Met Pro Asn Asn Leu Thr Asp Cys Glu Asp Gly Asp Gly Gly Ala Asn | |
| 1 5 10 15 | |
| ccg ggt gat ggc aac ccc aag gaa agc agt ccc ttc atc aac agc acc | 96 |
| Pro Gly Asp Gly Asn Pro Lys Glu Ser Ser Pro Phe Ile Asn Ser Thr | |
| 20 25 30 | |
| gac aca gag aag gga aag gag tat gat ggc aag aac atg gcc ttg ttt | 144 |
| Asp Thr Glu Lys Gly Lys Glu Tyr Asp Gly Lys Asn Met Ala Leu Phe | |
| 35 40 45 | |
| gag gag gag atg gac acc agc cct atg gtg tcc tcc ttg ctc agt ggc | 192 |
| Glu Glu Glu Met Asp Thr Ser Pro Met Val Ser Ser Leu Leu Ser Gly | |
| 50 55 60 | |
| ctg gcc aac tac acc aac ctg ccc cag gga agt agg gag cat gaa gag | 240 |
| Leu Ala Asn Tyr Thr Asn Leu Pro Gln Gly Ser Arg Glu His Glu Glu | |
| 65 70 75 80 | |
| gca gaa aac aat gag ggt gga aaa aag aag ccg gtg cag gcc cca cgc | 288 |
| Ala Glu Asn Asn Glu Gly Gly Lys Lys Lys Pro Val Gln Ala Pro Arg | |
| 85 90 95 | |
| atg ggc acc ttc atg ggc gtg tac ctg ccg tgc ctg cag aac atc ttt | 336 |
| Met Gly Thr Phe Met Gly Val Tyr Leu Pro Cys Leu Gln Asn Ile Phe | |
| 100 105 110 | |
| ggc gtc atc ctc ttc ctg cgg ntc acc tgg gtg gtg ggc att gca ggc | 384 |
| Gly Val Ile Leu Phe Leu Arg Xaa Thr Trp Val Val Gly Ile Ala Gly | |
| 115 120 125 | |
| atc atg gag tcc ttc tgc atg gtg ttc atc tgc tgc tcc tgt acg atg | 432 |
| Ile Met Glu Ser Phe Cys Met Val Phe Ile Cys Cys Ser Cys Thr Met | |
| 130 135 140 | |
| ctc acg gcc atc tcc atg agt gca att gca acg aat ggt gtt gtg cct | 480 |
| Leu Thr Ala Ile Ser Met Ser Ala Ile Ala Thr Asn Gly Val Val Pro | |
| 145 150 155 160 | |
| gct ggt ggc tcc tac tac atg att tcc agg tct ctg ggc cca gag ttt | 528 |
| Ala Gly Gly Ser Tyr Tyr Met Ile Ser Arg Ser Leu Gly Pro Glu Phe | |
| 165 170 175 | |
| ggg ggt gcc gtg ggc ctc tgc ttc tac ctg ggc act acc ttt gca gga | 576 |
| Gly Gly Ala Val Gly Leu Cys Phe Tyr Leu Gly Thr Thr Phe Ala Gly | |
| 180 185 190 | |
| gcc atg tac atc ctg ggc acc atc gaa atc ctg ctg gct tac ctc ttc | 624 |
| Ala Met Tyr Ile Leu Gly Thr Ile Glu Ile Leu Leu Ala Tyr Leu Phe | |
| 195 200 205 | |
| cca gcc atg gcc atc ttc aag gca gaa gat gcc agt ggg gag gca gca | 672 |
| Pro Ala Met Ala Ile Phe Lys Ala Glu Asp Ala Ser Gly Glu Ala Ala | |
| 210 215 220 | |

| | |
|-----------------------------------------------------------------|------|
| gcc atg ctg aac aac atg cgt gtt tac ggc acc tgt gtg ctc acc tgc | 720 |
| Ala Met Leu Asn Asn Met Arg Val Tyr Gly Thr Cys Val Leu Thr Cys | |
| 225 230 235 240 | |
| atg gcc act gtg gtg ttt gtg ggt gtc aag tat gtc aac aag ttt gcc | 768 |
| Met Ala Thr Val Val Phe Val Gly Val Lys Tyr Val Asn Lys Phe Ala | |
| 245 250 255 | |
| ctt gtc ttc ctg ggt tgt gtc atc ctc tcc atc ctg gcc atc tat gct | 816 |
| Leu Val Phe Leu Gly Cys Val Ile Leu Ser Ile Leu Ala Ile Tyr Ala | |
| 260 265 270 | |
| ggg gtc atc aag tct gcc ttc gac cca ccc aac ttc ccg atc tgc ctc | 864 |
| Gly Val Ile Lys Ser Ala Phe Asp Pro Pro Asn Phe Pro Ile Cys Leu | |
| 275 280 285 | |
| ctg ggt aac cgc acg ctg tct cgc cat ggc ttt gat gtc tgt gcc aag | 912 |
| Leu Gly Asn Arg Thr Leu Ser Arg His Gly Phe Asp Val Cys Ala Lys | |
| 290 295 300 | |
| ctg gct tgg gaa gga aat gag acg gtg acc aca cgg cta tgg ggc ctt | 960 |
| Leu Ala Trp Glu Gly Asn Glu Thr Val Thr Thr Arg Leu Trp Gly Leu | |
| 305 310 315 320 | |
| ttc tgc tcc tct cgc ttc ctc aac gcc acc tgt gat gaa tac ttc acc | 1008 |
| Phe Cys Ser Ser Arg Phe Leu Asn Ala Thr Cys Asp Glu Tyr Phe Thr | |
| 325 330 335 | |
| cga aac aat gtc aca gag atc cag ggc atc cct ggt gct gcc agt ggc | 1056 |
| Arg Asn Asn Val Thr Glu Ile Gln Gly Ile Pro Gly Ala Ala Ser Gly | |
| 340 345 350 | |
| ctc atc aaa gag aac ntc tgg agc tcc tac ctg acc aag ggc gtg att | 1104 |
| Leu Ile Lys Glu Asn Xaa Trp Ser Ser Tyr Leu Thr Lys Gly Val Ile | |
| 355 360 365 | |
| gtg gag agg agt ggg atg acc tcg gtg ggc ctg gcc gat ggc act cct | 1152 |
| Val Glu Arg Ser Gly Met Thr Ser Val Gly Leu Ala Asp Gly Thr Pro | |
| 370 375 380 | |
| atc gac atg gac cac cct tat gtc ttc agt gat atg acc tcc tac ttc | 1200 |
| Ile Asp Met Asp His Pro Tyr Val Phe Ser Asp Met Thr Ser Tyr Phe | |
| 385 390 395 400 | |
| acc ctg ctg gtt ggc atc tac ttc ccc tca gtc aca ggg atc atg gct | 1248 |
| Thr Leu Leu Val Gly Ile Tyr Phe Pro Ser Val Thr Gly Ile Met Ala | |
| 405 410 415 | |
| ggt tct aac cgc tct ggg gac ctg agg gat gcc cag aag tca atc ccc | 1296 |
| Gly Ser Asn Arg Ser Gly Asp Leu Arg Asp Ala Gln Lys Ser Ile Pro | |
| 420 425 430 | |
| act ggc acc atc ctg gcc atc gcc acc acc tct gct gtc tac atc agc | 1344 |
| Thr Gly Thr Ile Leu Ala Ile Ala Thr Thr Ser Ala Val Tyr Ile Ser | |
| 435 440 445 | |

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|-----------------------------------------------------------------|------|
| tcc gtt gtt ctg ttt ggg gcc tgc att gag ggg gtc gtc ctg cgg gac | 1392 |
| Ser Val Val Leu Phe Gly Ala Cys Ile Glu Gly Val Val Leu Arg Asp | |
| 450 455 460 | |
| aag ttt ggc gaa gct gtg aat ggc aac ctc gtg gtg ggc act ctg gcc | 1440 |
| Lys Phe Gly Glu Ala Val Asn Gly Asn Leu Val Val Gly Thr Leu Ala | |
| 465 470 475 480 | |
| tgg cca tct cca tgg gta att gtc atc gga tcc ttc ttc tcc acc tgt | 1488 |
| Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser Phe Phe Ser Thr Cys | |
| 485 490 495 | |
| ggg gct ggg ctg cag agc ctc acg ggg gcc cca cgc ctg ctg cag gcc | 1536 |
| Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala Pro Arg Leu Leu Gln Ala | |
| 500 505 510 | |
| atc tcg agg gat ggc att gtg ccc ttc ctg cag gtc ttt ggc cat ggc | 1584 |
| Ile Ser Arg Asp Gly Ile Val Pro Phe Leu Gln Val Phe Gly His Gly | |
| 515 520 525 | |
| aag gcc aat gga gag ccg acc tgg gcc ctg ctc ctg act gcc tgc atc | 1632 |
| Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu Leu Thr Ala Cys Ile | |
| 530 535 540 | |
| tgc gag att ggc atc ctc att gca tcc ctc gac gag gtg gcc ccc atc | 1680 |
| Cys Glu Ile Gly Ile Leu Ile Ala Ser Leu Asp Glu Val Ala Pro Ile | |
| 545 550 555 560 | |
| ctc tct atg ttc ttc ctg atg tgc tac atg ttt gtg aat ctg gcc tgt | 1728 |
| Leu Ser Met Phe Phe Leu Met Cys Tyr Met Phe Val Asn Leu Ala Cys | |
| 565 570 575 | |
| gca gtg cag acg ctg ctg agg aca ccc aac tgg agg cca cgc ttt cga | 1776 |
| Ala Val Gln Thr Leu Leu Arg Thr Pro Asn Trp Arg Pro Arg Phe Arg | |
| 580 585 590 | |
| tat tac cac tgg acc ctc tcc ttc ctg ggc atg agc ctc tgc ctg gcc | 1824 |
| Tyr Tyr His Trp Thr Leu Ser Phe Leu Gly Met Ser Leu Cys Leu Ala | |
| 595 600 605 | |
| ctc atg ttc atc tgc tcc tgg tat tat gca ctg gta gcc atg ctc att | 1872 |
| Leu Met Phe Ile Cys Ser Trp Tyr Tyr Ala Leu Val Ala Met Leu Ile | |
| 610 615 620 | |
| gct gga ctc atc tac aag tac att gag tac cgt ggg gca gag aag gag | 1920 |
| Ala Gly Leu Ile Tyr Lys Tyr Ile Glu Tyr Arg Gly Ala Glu Lys Glu | |
| 625 630 635 640 | |
| tgg ggc gat ggg ata cga ggt ctg tct ctc agt gcg gct cgc tat gcc | 1968 |
| Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser Ala Ala Arg Tyr Ala | |
| 645 650 655 | |
| ctc tta cgc ctg gag gaa ggg ccc cca cac acc aag aac tgg agg cca | 2016 |
| Leu Leu Arg Leu Glu Glu Gly Pro Pro His Thr Lys Asn Trp Arg Pro | |
| 660 665 670 | |

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| cag ctg ctg gtg ctg gtg cgt gtg gac caa gac cag aat gtg gtg cac | 2064 |
| Gln Leu Leu Val Leu Val Arg Val Asp Gln Asp Gln Asn Val Val His | |
| 675 680 685 | |
| ccc cag ctg ctc tca ctg acc tcc cag ctg aag gca ggg aag ggc ctg | 2112 |
| Pro Gln Leu Leu Ser Leu Thr Ser Gln Leu Lys Ala Gly Lys Gly Leu | |
| 690 695 700 | |
| acc atc gtg ggc tct gtc ctt gag ggc acc ttt ctg gaa aat cat cca | 2160 |
| Thr Ile Val Gly Ser Val Leu Glu Gly Thr Phe Leu Glu Asn His Pro | |
| 705 710 715 720 | |
| cag gcc cag cgg gca gaa gag tct atc agg cgc ctg atg gag gca gag | 2208 |
| Gln Ala Gln Arg Ala Glu Glu Ser Ile Arg Arg Leu Met Glu Ala Glu | |
| 725 730 735 | |
| aag gtg aag ggc ttc tgc cag gtg gtg atc tcc tcc aac ttg cgt gat | 2256 |
| Lys Val Lys Gly Phe Cys Gln Val Val Ile Ser Ser Asn Leu Arg Asp | |
| 740 745 750 | |
| ggc gtg tcc cat ctg atc cag tcc ggg ggc ctc ggg ggg ctg cag cac | 2304 |
| Gly Val Ser His Leu Ile Gln Ser Gly Gly Leu Gly Gly Leu Gln His | |
| 755 760 765 | |
| aac act gtg ctt gtt ggc tgg ccc cgc aac tgg cgc cag aag gaa gat | 2352 |
| Asn Thr Val Leu Val Gly Trp Pro Arg Asn Trp Arg Gln Lys Glu Asp | |
| 770 775 780 | |
| cat cag acg tgg agg aac ttc att gag ctg gtc cgg gaa acc aca gct | 2400 |
| His Gln Thr Trp Arg Asn Phe Ile Glu Leu Val Arg Glu Thr Thr Ala | |
| 785 790 795 800 | |
| ggc cac tta gcc ctg ctg gtc acc aag aac gtt tcc atg ttt cct ggg | 2448 |
| Gly His Leu Ala Leu Leu Val Thr Lys Asn Val Ser Met Phe Pro Gly | |
| 805 810 815 | |
| aac cct gag cgc ttc tct gag ggc agc atc gac gtt tgg tgg att gtg | 2496 |
| Asn Pro Glu Arg Phe Ser Glu Gly Ser Ile Asp Val Trp Trp Ile Val | |
| 820 825 830 | |
| cac gat gga ggc atg ctc atg ctg ctg ccc ttc ctg ctg cgg cac cac | 2544 |
| His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu Leu Arg His His | |
| 835 840 845 | |
| aag gtc tgg cgg aag tgc aag atg cgt atc ttc act gtg gcc cag atg | 2592 |
| Lys Val Trp Arg Lys Cys Lys Met Arg Ile Phe Thr Val Ala Gln Met | |
| 850 855 860 | |
| gat gac aat agc atc cag atg aag aag gat ctg acc aca ttt ctg tat | 2640 |
| Asp Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Thr Thr Phe Leu Tyr | |
| 865 870 875 880 | |
| cat tta cgc atc act gcg gag gtc gag gtg gtg gag atg cat gag agc | 2688 |
| His Leu Arg Ile Thr Ala Glu Val Glu Val Val Glu Met His Glu Ser | |
| 885 890 895 | |

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|-----------------------------------------------------------------|------|
| gac atc tca gct tac acc tat gag aag acg ttg gtg atg gag cag cgt | 2736 |
| Asp Ile Ser Ala Tyr Thr Tyr Glu Lys Thr Leu Val Met Glu Gln Arg | |
| 900 905 910 | |
| tcc cag atc ntc aaa cag atg cat tta acc aag aat gag cgg gag cgg | 2784 |
| Ser Gln Ile Xaa Lys Gln Met His Leu Thr Lys Asn Glu Arg Glu Arg | |
| 915 920 925 | |
| gag atc cag agt atc aca gat gag tca cga ggc tca atc cgg aga aag | 2832 |
| Glu Ile Gln Ser Ile Thr Asp Glu Ser Arg Gly Ser Ile Arg Arg Lys | |
| 930 935 940 | |
| aat cca gcc aac acg cgg ctc cgc ctg aac gtc cca gaa gag acg gct | 2880 |
| Asn Pro Ala Asn Thr Arg Leu Arg Leu Asn Val Pro Glu Glu Thr Ala | |
| 945 950 955 960 | |
| ggt gac agt gaa gag aag cca gag gag gag gtg cag ctg atc cac gat | 2928 |
| Gly Asp Ser Glu Glu Lys Pro Glu Glu Glu Val Gln Leu Ile His Asp | |
| 965 970 975 | |
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| Gln Ser Ala Pro Ser Cys Pro Ser Ser Ser Pro Ser Pro Gly Glu Glu | |
| 980 985 990 | |
| cct gag ggg gaa ggg gag aca gat ccg gag aag gtg cat ctc acc tgg | 3024 |
| Pro Glu Gly Glu Gly Glu Thr Asp Pro Glu Lys Val His Leu Thr Trp | |
| 995 1000 1005 | |
| acc aag gac aag tcg gtg gca gag aag aat aag ggc ccc agt cct gtc | 3072 |
| Thr Lys Asp Lys Ser Val Ala Glu Lys Asn Lys Gly Pro Ser Pro Val | |
| 1010 1015 1020 | |
| tcc tct gag ggc atc aag gac ttc ttc agc atg aag ccg gag tgg gag | 3120 |
| Ser Ser Glu Gly Ile Lys Asp Phe Phe Ser Met Lys Pro Glu Trp Glu | |
| 1025 1030 1035 1040 | |
| aac ttg aac cag tcc aac gtg cgg cgc atg cac acg gcc gtg cgg ctg | 3168 |
| Asn Leu Asn Gln Ser Asn Val Arg Arg Met His Thr Ala Val Arg Leu | |
| 1045 1050 1055 | |
| aac gag gtc atc gtg aag aaa tcc cgg gac gcc aag ctt gtt ttg ctc | 3216 |
| Asn Glu Val Ile Val Lys Lys Ser Arg Asp Ala Lys Leu Val Leu Leu | |
| 1060 1065 1070 | |
| aac atg cct ggg cct ccc cgc aac cgc aat ggt gat gaa aac tac atg | 3264 |
| Asn Met Pro Gly Pro Pro Arg Asn Arg Asn Gly Asp Glu Asn Tyr Met | |
| 1075 1080 1085 | |
| gag ttt ctc gag gtc ctc aca gag cac ctg gac cgg gtg atg ctg gtc | 3312 |
| Glu Phe Leu Glu Val Leu Thr Glu His Leu Asp Arg Val Met Leu Val | |
| 1090 1095 1100 | |
| cgc ggc ggc ggc cgc gag gtc atc acc atc tac tcc tgagaaccag | 3358 |
| Arg Gly Gly Gly Arg Glu Val Ile Thr Ile Tyr Ser | |
| 1105 1110 1115 | |
| gtcctgccac ccgggccga gcgcgcccg cccgcggctc cggagccctc gccgcgcccc | 3418 |

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 1 5 10 15
 Pro Gly Asp Gly Asn Pro Lys Glu Ser Ser Pro Phe Ile Asn Ser Thr
 20 25 30

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Thr | Glu | Lys | Gly | Lys | Glu | Tyr | Asp | Gly | Lys | Asn | Met | Ala | Leu | Phe | 35 | 40 | 45 |
| Glu | Glu | Glu | Met | Asp | Thr | Ser | Pro | Met | Val | Ser | Ser | Leu | Leu | Ser | Gly | 50 | 55 | 60 |
| Leu | Ala | Asn | Tyr | Thr | Asn | Leu | Pro | Gln | Gly | Ser | Arg | Glu | His | Glu | Glu | 65 | 70 | 75 |
| Ala | Glu | Asn | Asn | Glu | Gly | Gly | Lys | Lys | Lys | Pro | Val | Gln | Ala | Pro | Arg | 85 | 90 | 95 |
| Met | Gly | Thr | Phe | Met | Gly | Val | Tyr | Leu | Pro | Cys | Leu | Gln | Asn | Ile | Phe | 100 | 105 | 110 |
| Gly | Val | Ile | Leu | Phe | Leu | Arg | Xaa | Thr | Trp | Val | Val | Gly | Ile | Ala | Gly | 115 | 120 | 125 |
| Ile | Met | Glu | Ser | Phe | Cys | Met | Val | Phe | Ile | Cys | Cys | Ser | Cys | Thr | Met | 130 | 135 | 140 |
| Leu | Thr | Ala | Ile | Ser | Met | Ser | Ala | Ile | Ala | Thr | Asn | Gly | Val | Val | Pro | 145 | 150 | 155 |
| Ala | Gly | Gly | Ser | Tyr | Tyr | Met | Ile | Ser | Arg | Ser | Leu | Gly | Pro | Glu | Phe | 165 | 170 | 175 |
| Gly | Gly | Ala | Val | Gly | Leu | Cys | Phe | Tyr | Leu | Gly | Thr | Thr | Phe | Ala | Gly | 180 | 185 | 190 |
| Ala | Met | Tyr | Ile | Leu | Gly | Thr | Ile | Glu | Ile | Leu | Leu | Ala | Tyr | Leu | Phe | 195 | 200 | 205 |
| Pro | Ala | Met | Ala | Ile | Phe | Lys | Ala | Glu | Asp | Ala | Ser | Gly | Glu | Ala | Ala | 210 | 215 | 220 |
| Ala | Met | Leu | Asn | Asn | Met | Arg | Val | Tyr | Gly | Thr | Cys | Val | Leu | Thr | Cys | 225 | 230 | 235 |
| Met | Ala | Thr | Val | Val | Phe | Val | Gly | Val | Lys | Tyr | Val | Asn | Lys | Phe | Ala | 245 | 250 | 255 |
| Leu | Val | Phe | Leu | Gly | Cys | Val | Ile | Leu | Ser | Ile | Leu | Ala | Ile | Tyr | Ala | 260 | 265 | 270 |
| Gly | Val | Ile | Lys | Ser | Ala | Phe | Asp | Pro | Pro | Asn | Phe | Pro | Ile | Cys | Leu | 275 | 280 | 285 |
| Leu | Gly | Asn | Arg | Thr | Leu | Ser | Arg | His | Gly | Phe | Asp | Val | Cys | Ala | Lys | 290 | 295 | 300 |
| Leu | Ala | Trp | Glu | Gly | Asn | Glu | Thr | Val | Thr | Thr | Arg | Leu | Trp | Gly | Leu | 305 | 310 | 315 |
| Phe | Cys | Ser | Ser | Arg | Phe | Leu | Asn | Ala | Thr | Cys | Asp | Glu | Tyr | Phe | Thr | 325 | 330 | 335 |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Asn | Asn | Val | Thr | Glu | Ile | Gln | Gly | Ile | Pro | Gly | Ala | Ala | Ser | Gly | 340 | 345 | 350 |
| Leu | Ile | Lys | Glu | Asn | Xaa | Trp | Ser | Ser | Tyr | Leu | Thr | Lys | Gly | Val | Ile | 355 | 360 | 365 |
| Val | Glu | Arg | Ser | Gly | Met | Thr | Ser | Val | Gly | Leu | Ala | Asp | Gly | Thr | Pro | 370 | 375 | 380 |
| Ile | Asp | Met | Asp | His | Pro | Tyr | Val | Phe | Ser | Asp | Met | Thr | Ser | Tyr | Phe | 385 | 390 | 395 |
| Thr | Leu | Leu | Val | Gly | Ile | Tyr | Phe | Pro | Ser | Val | Thr | Gly | Ile | Met | Ala | 405 | 410 | 415 |
| Gly | Ser | Asn | Arg | Ser | Gly | Asp | Leu | Arg | Asp | Ala | Gln | Lys | Ser | Ile | Pro | 420 | 425 | 430 |
| Thr | Gly | Thr | Ile | Leu | Ala | Ile | Ala | Thr | Thr | Ser | Ala | Val | Tyr | Ile | Ser | 435 | 440 | 445 |
| Ser | Val | Val | Leu | Phe | Gly | Ala | Cys | Ile | Glu | Gly | Val | Val | Leu | Arg | Asp | 450 | 455 | 460 |
| Lys | Phe | Gly | Glu | Ala | Val | Asn | Gly | Asn | Leu | Val | Val | Gly | Thr | Leu | Ala | 465 | 470 | 475 |
| Trp | Pro | Ser | Pro | Trp | Val | Ile | Val | Ile | Gly | Ser | Phe | Phe | Ser | Thr | Cys | 485 | 490 | 495 |
| Gly | Ala | Gly | Leu | Gln | Ser | Leu | Thr | Gly | Ala | Pro | Arg | Leu | Leu | Gln | Ala | 500 | 505 | 510 |
| Ile | Ser | Arg | Asp | Gly | Ile | Val | Pro | Phe | Leu | Gln | Val | Phe | Gly | His | Gly | 515 | 520 | 525 |
| Lys | Ala | Asn | Gly | Glu | Pro | Thr | Trp | Ala | Leu | Leu | Leu | Thr | Ala | Cys | Ile | 530 | 535 | 540 |
| Cys | Glu | Ile | Gly | Ile | Leu | Ile | Ala | Ser | Leu | Asp | Glu | Val | Ala | Pro | Ile | 545 | 550 | 555 |
| Leu | Ser | Met | Phe | Phe | Leu | Met | Cys | Tyr | Met | Phe | Val | Asn | Leu | Ala | Cys | 565 | 570 | 575 |
| Ala | Val | Gln | Thr | Leu | Leu | Arg | Thr | Pro | Asn | Trp | Arg | Pro | Arg | Phe | Arg | 580 | 585 | 590 |
| Tyr | Tyr | His | Trp | Thr | Leu | Ser | Phe | Leu | Gly | Met | Ser | Leu | Cys | Leu | Ala | 595 | 600 | 605 |
| Leu | Met | Phe | Ile | Cys | Ser | Trp | Tyr | Tyr | Ala | Leu | Val | Ala | Met | Leu | Ile | 610 | 615 | 620 |
| Ala | Gly | Leu | Ile | Tyr | Lys | Tyr | Ile | Glu | Tyr | Arg | Gly | Ala | Glu | Lys | Glu | 625 | 630 | 635 |

Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser Ala Ala Arg Tyr Ala
 645 650 655
 Leu Leu Arg Leu Glu Glu Gly Pro Pro His Thr Lys Asn Trp Arg Pro
 660 665 670
 Gln Leu Leu Val Leu Val Arg Val Asp Gln Asp Gln Asn Val Val His
 675 680 685
 Pro Gln Leu Leu Ser Leu Thr Ser Gln Leu Lys Ala Gly Lys Gly Leu
 690 695 700
 Thr Ile Val Gly Ser Val Leu Glu Gly Thr Phe Leu Glu Asn His Pro
 705 710 715 720
 Gln Ala Gln Arg Ala Glu Glu Ser Ile Arg Arg Leu Met Glu Ala Glu
 725 730 735
 Lys Val Lys Gly Phe Cys Gln Val Val Ile Ser Ser Asn Leu Arg Asp
 740 745 750
 Gly Val Ser His Leu Ile Gln Ser Gly Gly Leu Gly Gly Leu Gln His
 755 760 765
 Asn Thr Val Leu Val Gly Trp Pro Arg Asn Trp Arg Gln Lys Glu Asp
 770 775 780
 His Gln Thr Trp Arg Asn Phe Ile Glu Leu Val Arg Glu Thr Thr Ala
 785 790 795 800
 Gly His Leu Ala Leu Leu Val Thr Lys Asn Val Ser Met Phe Pro Gly
 805 810 815
 Asn Pro Glu Arg Phe Ser Glu Gly Ser Ile Asp Val Trp Trp Ile Val
 820 825 830
 His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu Leu Arg His His
 835 840 845
 Lys Val Trp Arg Lys Cys Lys Met Arg Ile Phe Thr Val Ala Gln Met
 850 855 860
 Asp Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Thr Thr Phe Leu Tyr
 865 870 875 880
 His Leu Arg Ile Thr Ala Glu Val Glu Val Val Glu Met His Glu Ser
 885 890 895
 Asp Ile Ser Ala Tyr Thr Tyr Glu Lys Thr Leu Val Met Glu Gln Arg
 900 905 910
 Ser Gln Ile Xaa Lys Gln Met His Leu Thr Lys Asn Glu Arg Glu Arg
 915 920 925
 Glu Ile Gln Ser Ile Thr Asp Glu Ser Arg Gly Ser Ile Arg Arg Lys
 930 935 940

Asn Pro Ala Asn Thr Arg Leu Arg Leu Asn Val Pro Glu Glu Thr Ala
 945 950 955 960
 Gly Asp Ser Glu Glu Lys Pro Glu Glu Glu Val Gln Leu Ile His Asp
 965 970 975
 Gln Ser Ala Pro Ser Cys Pro Ser Ser Ser Pro Ser Pro Gly Glu Glu
 980 985 990
 Pro Glu Gly Glu Gly Glu Thr Asp Pro Glu Lys Val His Leu Thr Trp
 995 1000 1005
 Thr Lys Asp Lys Ser Val Ala Glu Lys Asn Lys Gly Pro Ser Pro Val
 1010 1015 1020
 Ser Ser Glu Gly Ile Lys Asp Phe Phe Ser Met Lys Pro Glu Trp Glu
 1025 1030 1035 1040
 Asn Leu Asn Gln Ser Asn Val Arg Arg Met His Thr Ala Val Arg Leu
 1045 1050 1055
 Asn Glu Val Ile Val Lys Lys Ser Arg Asp Ala Lys Leu Val Leu Leu
 1060 1065 1070
 Asn Met Pro Gly Pro Pro Arg Asn Arg Asn Gly Asp Glu Asn Tyr Met
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Met Pro Thr Asn Phe Thr Val Val Pro Val Glu Ala Arg

1

5

10

gcc gac ggc gcc ggg gac gaa gct gct gag cgc acg gaa gaa ccc gag 159

Ala Asp Gly Ala Gly Asp Glu Ala Ala Glu Arg Thr Glu Glu Pro Glu

15

20

25

tct ccc gag agc gtg gat caa acc tcc cct acg ccg gga gat gga aac 207

Ser Pro Glu Ser Val Asp Gln Thr Ser Pro Thr Pro Gly Asp Gly Asn

30

35

40

45

ccc agg gaa aac agc cct ttc atc aat aat gtg gag gtg gaa aga gag 255

Pro Arg Glu Asn Ser Pro Phe Ile Asn Asn Val Glu Val Glu Arg Glu

50

55

60

agc tac ttc gag ggg aag aac atg gca ntt ttt gag gaa gag atg gac 303

Ser Tyr Phe Glu Gly Lys Asn Met Ala Xaa Phe Glu Glu Glu Met Asp

65

70

75

agc aac ccc atg gtg tca tca ctg ctg aac aag ctg gcc aac tat acc 351

Ser Asn Pro Met Val Ser Ser Leu Leu Asn Lys Leu Ala Asn Tyr Thr

80

85

90

aac ctg agc cag ggt gtg gta gag cat gag gaa gat gag gac agc cgg 399

Asn Leu Ser Gln Gly Val Val Glu His Glu Glu Asp Glu Asp Ser Arg

95

100

105

agg cga gag gtc aag gcc cca cgc atg ggc acc ttc atc gga gtc tac 447

Arg Arg Glu Val Lys Ala Pro Arg Met Gly Thr Phe Ile Gly Val Tyr

110

115

120

125

ctg ccg tgc ctg cag aac atc ttg ggt gtt atc ctt ttc ctg cgt ctg 495

Leu Pro Cys Leu Gln Asn Ile Leu Gly Val Ile Leu Phe Leu Arg Leu

130

135

140

acc tgg att gtg ggg gca gct ggt gtt atg gag tcc ttc ntc att gtg 543

Thr Trp Ile Val Gly Ala Ala Gly Val Met Glu Ser Phe Xaa Ile Val

145

150

155

gcc atg tgc tgc acc tgt aca atg ctg aca gcc atc tcc atg agc gcc 591

Ala Met Cys Cys Thr Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala

160

165

170

atc gct acc aac ggc gtg gtc cca gcg gga ggc tcg tac tac atg atc 639

Ile Ala Thr Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Tyr Met Ile

175

180

185

tcc cgt tcg ctg ggg cct gag ttt gga ggt gct gtt ggc ctc tgc ttc 687

Ser Arg Ser Leu Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys Phe

190

195

200

205

| | |
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| tac ttg ggc acg aca ttt gca ggc gcc atg tac atc ctg ggt acc atc | 735 |
| Tyr Leu Gly Thr Thr Phe Ala Gly Ala Met Tyr Ile Leu Gly Thr Ile | |
| 210 215 220 | |
| gag atc ttc ctg acc tac atc tct cca agt gcg gcc atc ttc cag gca | 783 |
| Glu Ile Phe Leu Thr Tyr Ile Ser Pro Ser Ala Ala Ile Phe Gln Ala | |
| 225 230 235 | |
| gag acg gcg gat ggc gag gcg gcc gca ctg ttg aac aac atg cgt gtg | 831 |
| Glu Thr Ala Asp Gly Glu Ala Ala Ala Leu Leu Asn Asn Met Arg Val | |
| 240 245 250 | |
| tat ggc agc tgt gcc ctg gca ctc atg gcg gtg gtg gtc ttt gtt ggt | 879 |
| Tyr Gly Ser Cys Ala Leu Ala Leu Met Ala Val Val Val Phe Val Gly | |
| 255 260 265 | |
| gtc aaa tat gtc aac aag ctg gca ctg gtc ttc tta gcc tgt gtt gtg | 927 |
| Val Lys Tyr Val Asn Lys Leu Ala Leu Val Phe Leu Ala Cys Val Val | |
| 270 275 280 285 | |
| ctt tct atc ctg gcc atc tat gct ggt gtc atc aag aca gcc ttt gcc | 975 |
| Leu Ser Ile Leu Ala Ile Tyr Ala Gly Val Ile Lys Thr Ala Phe Ala | |
| 290 295 300 | |
| cca cct gac atc ccg gtc tgc ctt cta ggg aac cgc acg ctg gca aat | 1023 |
| Pro Pro Asp Ile Pro Val Cys Leu Leu Gly Asn Arg Thr Leu Ala Asn | |
| 305 310 315 | |
| cgc aac ttt gat acc tgt gcc aag atg cag gtt gtc agc aac ggt aca | 1071 |
| Arg Asn Phe Asp Thr Cys Ala Lys Met Gln Val Val Ser Asn Gly Thr | |
| 320 325 330 | |
| gtg acc act gca ctc tgg cgc ctc ttc tgc aat ggc tcc agc ttg ggt | 1119 |
| Val Thr Thr Ala Leu Trp Arg Leu Phe Cys Asn Gly Ser Ser Leu Gly | |
| 335 340 345 | |
| gcc acc tgt gat gag tac ttt gca cag aac aac gtt act gag ata cag | 1167 |
| Ala Thr Cys Asp Glu Tyr Phe Ala Gln Asn Asn Val Thr Glu Ile Gln | |
| 350 355 360 365 | |
| ggc atc cct ggt gtg gcc agt ggt gtc ttc ctg gat aac ctg tgg agc | 1215 |
| Gly Ile Pro Gly Val Ala Ser Gly Val Phe Leu Asp Asn Leu Trp Ser | |
| 370 375 380 | |
| aca tat tca gac aag ggg gca ttt gtg gaa aag aaa ggt gtg tcc tca | 1263 |
| Thr Tyr Ser Asp Lys Gly Ala Phe Val Glu Lys Lys Gly Val Ser Ser | |
| 385 390 395 | |
| gtg cct gtg tcc gag gag agc cgg cct ggt gga ttg cca tac gtc ctc | 1311 |
| Val Pro Val Ser Glu Glu Ser Arg Pro Gly Gly Leu Pro Tyr Val Leu | |
| 400 405 410 | |
| aca gac atc atg acc tac ttc acc atg cta gtt ggc atc tac ttc ccg | 1359 |
| Thr Asp Ile Met Thr Tyr Phe Thr Met Leu Val Gly Ile Tyr Phe Pro | |
| 415 420 425 | |

| | |
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| tct gta act ggg atc atg gca gga tcc aac cgc tcc ggg gac ctc aaa | 1407 |
| Ser Val Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys | |
| 430 435 440 445 | |
| gac gcc cag aag tct att cca aca ggg acc att ctg gcc atc gtg act | 1455 |
| Asp Ala Gln Lys Ser Ile Pro Thr Gly Thr Ile Leu Ala Ile Val Thr | |
| 450 455 460 | |
| aca tct ttc att tat ntt tcc tgc ata gtg ctg ttt ggg gcc tgc att | 1503 |
| Thr Ser Phe Ile Tyr Xaa Ser Cys Ile Val Leu Phe Gly Ala Cys Ile | |
| 465 470 475 | |
| gaa ggt gta gtc ctg cga gat aag ttt ggg gag gcc ttg caa ggg aac | 1551 |
| Glu Gly Val Val Leu Arg Asp Lys Phe Gly Glu Ala Leu Gln Gly Asn | |
| 480 485 490 | |
| ctg gtc att ggc atg ctg gcc tgg cca tct ccc tgg gtc att gtg att | 1599 |
| Leu Val Ile Gly Met Leu Ala Trp Pro Ser Pro Trp Val Ile Val Ile | |
| 495 500 505 | |
| ggc tcc ttc ttc tcc acc tgt ggt gct ggc ctg cag agc ctg act ggg | 1647 |
| Gly Ser Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly | |
| 510 515 520 525 | |
| gca ccc cgc cta ctg cag gcc att gcg cgt gac gga atc atc ccc ttc | 1695 |
| Ala Pro Arg Leu Leu Gln Ala Ile Ala Arg Asp Gly Ile Ile Pro Phe | |
| 530 535 540 | |
| cta cag gtg ttt ggt cat gga aag gcc aac ggg gag ccc aca tgg gcc | 1743 |
| Leu Gln Val Phe Gly His Gly Lys Ala Asn Gly Glu Pro Thr Trp Ala | |
| 545 550 555 | |
| ctg ctg ctc acg gct ctc atc tgt gag acc ggt atc ctc atc gcc tcc | 1791 |
| Leu Leu Leu Thr Ala Leu Ile Cys Glu Thr Gly Ile Leu Ile Ala Ser | |
| 560 565 570 | |
| ctg gac agt gtg gcc ccc atc ctg tcc atg ttc ttc ntc atg tgc tac | 1839 |
| Leu Asp Ser Val Ala Pro Ile Leu Ser Met Phe Phe Xaa Met Cys Tyr | |
| 575 580 585 | |
| atg ttc gtc aat ctg gcc tgt gcc gta cag acc ctg cta cgc aca ccc | 1887 |
| Met Phe Val Asn Leu Ala Cys Ala Val Gln Thr Leu Leu Arg Thr Pro | |
| 590 595 600 605 | |
| aac tgg cgt cca cgc ttc aag ttc tac cac tgg acc ctc tcc ttc ctt | 1935 |
| Asn Trp Arg Pro Arg Phe Lys Phe Tyr His Trp Thr Leu Ser Phe Leu | |
| 610 615 620 | |
| ggg atg agt ctc tgc ctc gcg ctg atg ttc atc tgc tcc tgg tac tac | 1983 |
| Gly Met Ser Leu Cys Leu Ala Leu Met Phe Ile Cys Ser Trp Tyr Tyr | |
| 625 630 635 | |
| gcc ntt ttc gcc atg ctc att gcc ggc tgc atc tac aag tac atc gag | 2031 |
| Ala Xaa Phe Ala Met Leu Ile Ala Gly Cys Ile Tyr Lys Tyr Ile Glu | |
| 640 645 650 | |

| | |
|-----------------------------------------------------------------|------|
| tac cgc ggg gct gag aag gag tgg ggg gat ggc atc agg ggc ctg tca | 2079 |
| Tyr Arg Gly Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser | |
| 655 660 665 | |
| ctg aat gct gcc cgc tac gcc ctg ctg cgt gtg gaa cat ggg ccc cca | 2127 |
| Leu Asn Ala Ala Arg Tyr Ala Leu Leu Arg Val Glu His Gly Pro Pro | |
| 670 675 680 685 | |
| cat acc aag aac tgg agg ccc cag gtg ttg gtg atg ctg aac ctg gac | 2175 |
| His Thr Lys Asn Trp Arg Pro Gln Val Leu Val Met Leu Asn Leu Asp | |
| 690 695 700 | |
| tcg gag cag tgt gta aag cac ccc cgc ctg ctg tcc ttc acc tct cag | 2223 |
| Ser Glu Gln Cys Val Lys His Pro Arg Leu Leu Ser Phe Thr Ser Gln | |
| 705 710 715 | |
| ctg aag gct ggc aag ggc ctg acc atc gtg gga tct gtg cta gag ggc | 2271 |
| Leu Lys Ala Gly Lys Gly Leu Thr Ile Val Gly Ser Val Leu Glu Gly | |
| 720 725 730 | |
| acc tac tta gac aag cat gtg gag gcc cag agg gct gaa gag aat atc | 2319 |
| Thr Tyr Leu Asp Lys His Val Glu Ala Gln Arg Ala Glu Glu Asn Ile | |
| 735 740 745 | |
| cgg tct ctg atg agt gca gag aag acg aag ggc ttc tgc cag ctg gtg | 2367 |
| Arg Ser Leu Met Ser Ala Glu Lys Thr Lys Gly Phe Cys Gln Leu Val | |
| 750 755 760 765 | |
| gtg tcc tcc aac ctg cga gat ggt gcg tcc cac ctg atc cag tcg gct | 2415 |
| Val Ser Ser Asn Leu Arg Asp Gly Ala Ser His Leu Ile Gln Ser Ala | |
| 770 775 780 | |
| ggc ctc ggt ggc atg aaa cac aac act gtc ctc atg gcc tgg cca gag | 2463 |
| Gly Leu Gly Gly Met Lys His Asn Thr Val Leu Met Ala Trp Pro Glu | |
| 785 790 795 | |
| gct tgg aag gag gca gat aat cct ttc tcc tgg aag aac ttt gta gac | 2511 |
| Ala Trp Lys Glu Ala Asp Asn Pro Phe Ser Trp Lys Asn Phe Val Asp | |
| 800 805 810 | |
| aca gtc cgt gac act aca gca gca cat cag gcc ttg ttg gtg gcc aag | 2559 |
| Thr Val Arg Asp Thr Thr Ala Ala His Gln Ala Leu Leu Val Ala Lys | |
| 815 820 825 | |
| aac att gac tta ttc cca caa aac caa gag cgc ttc agc gac ggg aac | 2607 |
| Asn Ile Asp Leu Phe Pro Gln Asn Gln Glu Arg Phe Ser Asp Gly Asn | |
| 830 835 840 845 | |
| att gat gtg tgg tgg atc gtg cat gac ggg ggc atg ctc atg ctt ctg | 2655 |
| Ile Asp Val Trp Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu | |
| 850 855 860 | |
| ccc ttt ctg ctg cgc cag cac aag gtg tgg cga aag tgc cgg atg cgc | 2703 |
| Pro Phe Leu Leu Arg Gln His Lys Val Trp Arg Lys Cys Arg Met Arg | |
| 865 870 875 | |

| | |
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| atc ttc act gtg gcc cag gtg gat gat aac agc atc cag atg aag aag | 2751 |
| Ile Phe Thr Val Ala Gln Val Asp Asp Asn Ser Ile Gln Met Lys Lys | |
| 880 885 890 | |
| gac ctg cag atg ttc ctg tac cac ctc agg atc agt gcc gag gtg gag | 2799 |
| Asp Leu Gln Met Phe Leu Tyr His Leu Arg Ile Ser Ala Glu Val Glu | |
| 895 900 905 | |
| gtg gtg gag atg gtt gaa aat gat att tcc gca ttc acc tat gag aag | 2847 |
| Val Val Glu Met Val Glu Asn Asp Ile Ser Ala Phe Thr Tyr Glu Lys | |
| 910 915 920 925 | |
| acg cta atg atg gag cag agg tca cag atg ctg aaa cag atg cag ttg | 2895 |
| Thr Leu Met Met Glu Gln Arg Ser Gln Met Leu Lys Gln Met Gln Leu | |
| 930 935 940 | |
| tca aag aat gag cgg gag aga gag gcc cag ctg att cat gac agg aac | 2943 |
| Ser Lys Asn Glu Arg Glu Arg Glu Ala Gln Leu Ile His Asp Arg Asn | |
| 945 950 955 | |
| act gca tcc cat acc aca gca act gct aga acc caa gcc cca cca aca | 2991 |
| Thr Ala Ser His Thr Thr Ala Thr Ala Arg Thr Gln Ala Pro Pro Thr | |
| 960 965 970 | |
| ccc gac aaa gtg cag atg aca tgg acg aaa gag aaa ctc att gca gag | 3039 |
| Pro Asp Lys Val Gln Met Thr Trp Thr Lys Glu Lys Leu Ile Ala Glu | |
| 975 980 985 | |
| aaa cac agg aac aag gac act ggc cca tca ggc ttc aaa gac ctc ttc | 3087 |
| Lys His Arg Asn Lys Asp Thr Gly Pro Ser Gly Phe Lys Asp Leu Phe | |
| 990 995 1000 1005 | |
| agc cta aag ccg gac cag tcc aac gtc agg agg atg cat act gct gtg | 3135 |
| Ser Leu Lys Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val | |
| 1010 1015 1020 | |
| aag ntc aac ggc gta gtt ctc aac aag tcc cag gat gcc caa ctg gtc | 3183 |
| Lys Xaa Asn Gly Val Val Leu Asn Lys Ser Gln Asp Ala Gln Leu Val | |
| 1025 1030 1035 | |
| ctg ctg aat atg cca ggc ccc cca aaa agt cgg cag ggg gac gag aac | 3231 |
| Leu Leu Asn Met Pro Gly Pro Pro Lys Ser Arg Gln Gly Asp Glu Asn | |
| 1040 1045 1050 | |
| tac atg gag ttc ctc gag gtc ctg acg gaa ggg ctg aac agg gtc ctc | 3279 |
| Tyr Met Glu Phe Leu Glu Val Leu Thr Glu Gly Leu Asn Arg Val Leu | |
| 1055 1060 1065 | |
| ctg gtc agg ggt ggt ggc cga gaa gtc atc acc atc tac tcc | 3321 |
| Leu Val Arg Gly Gly Gly Arg Glu Val Ile Thr Ile Tyr Ser | |
| 1070 1075 1080 | |
| taacacctgc aacctggaca cacctggatg gggtcaggac tgtgcaagct gcctgtggcc | 3381 |
| aggctgggac tcgccagcat gccactgtga tagccactgc tctggcactc attgcctggc | 3441 |
| ctaccaacat gttgcagtga ttctggtcac cctgacacac acggcttccc acagacataa | 3501 |

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35 40 45
Asn Ser Pro Phe Ile Asn Asn Val Glu Val Glu Arg Glu Ser Tyr Phe
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Glu Gly Lys Asn Met Ala Xaa Phe Glu Glu Glu Met Asp Ser Asn Pro
65 70 75 80
Met Val Ser Ser Leu Leu Asn Lys Leu Ala Asn Tyr Thr Asn Leu Ser
85 90 95
Gln Gly Val Val Glu His Glu Glu Asp Glu Asp Ser Arg Arg Arg Glu
100 105 110
Val Lys Ala Pro Arg Met Gly Thr Phe Ile Gly Val Tyr Leu Pro Cys
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Leu Gln Asn Ile Leu Gly Val Ile Leu Phe Leu Arg Leu Thr Trp Ile
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Val Gly Ala Ala Gly Val Met Glu Ser Phe Xaa Ile Val Ala Met Cys
145 150 155 160
Cys Thr Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala Ile Ala Thr
165 170 175
Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Tyr Met Ile Ser Arg Ser
180 185 190

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Gly | Pro | Glu | Phe | Gly | Gly | Ala | Val | Gly | Leu | Cys | Phe | Tyr | Leu | Gly | 195 | 200 | 205 |
| Thr | Thr | Phe | Ala | Gly | Ala | Met | Tyr | Ile | Leu | Gly | Thr | Ile | Glu | Ile | Phe | 210 | 215 | 220 |
| Leu | Thr | Tyr | Ile | Ser | Pro | Ser | Ala | Ala | Ile | Phe | Gln | Ala | Glu | Thr | Ala | 225 | 230 | 235 |
| Asp | Gly | Glu | Ala | Ala | Ala | Leu | Leu | Asn | Asn | Met | Arg | Val | Tyr | Gly | Ser | 245 | 250 | 255 |
| Cys | Ala | Leu | Ala | Leu | Met | Ala | Val | Val | Val | Phe | Val | Gly | Val | Lys | Tyr | 260 | 265 | 270 |
| Val | Asn | Lys | Leu | Ala | Leu | Val | Phe | Leu | Ala | Cys | Val | Val | Leu | Ser | Ile | 275 | 280 | 285 |
| Leu | Ala | Ile | Tyr | Ala | Gly | Val | Ile | Lys | Thr | Ala | Phe | Ala | Pro | Pro | Asp | 290 | 295 | 300 |
| Ile | Pro | Val | Cys | Leu | Leu | Gly | Asn | Arg | Thr | Leu | Ala | Asn | Arg | Asn | Phe | 305 | 310 | 315 |
| Asp | Thr | Cys | Ala | Lys | Met | Gln | Val | Val | Ser | Asn | Gly | Thr | Val | Thr | Thr | 325 | 330 | 335 |
| Ala | Leu | Trp | Arg | Leu | Phe | Cys | Asn | Gly | Ser | Ser | Leu | Gly | Ala | Thr | Cys | 340 | 345 | 350 |
| Asp | Glu | Tyr | Phe | Ala | Gln | Asn | Asn | Val | Thr | Glu | Ile | Gln | Gly | Ile | Pro | 355 | 360 | 365 |
| Gly | Val | Ala | Ser | Gly | Val | Phe | Leu | Asp | Asn | Leu | Trp | Ser | Thr | Tyr | Ser | 370 | 375 | 380 |
| Asp | Lys | Gly | Ala | Phe | Val | Glu | Lys | Lys | Gly | Val | Ser | Ser | Val | Pro | Val | 385 | 390 | 395 |
| Ser | Glu | Glu | Ser | Arg | Pro | Gly | Gly | Leu | Pro | Tyr | Val | Leu | Thr | Asp | Ile | 405 | 410 | 415 |
| Met | Thr | Tyr | Phe | Thr | Met | Leu | Val | Gly | Ile | Tyr | Phe | Pro | Ser | Val | Thr | 420 | 425 | 430 |
| Gly | Ile | Met | Ala | Gly | Ser | Asn | Arg | Ser | Gly | Asp | Leu | Lys | Asp | Ala | Gln | 435 | 440 | 445 |
| Lys | Ser | Ile | Pro | Thr | Gly | Thr | Ile | Leu | Ala | Ile | Val | Thr | Thr | Ser | Phe | 450 | 455 | 460 |
| Ile | Tyr | Xaa | Ser | Cys | Ile | Val | Leu | Phe | Gly | Ala | Cys | Ile | Glu | Gly | Val | 465 | 470 | 475 |
| Val | Leu | Arg | Asp | Lys | Phe | Gly | Glu | Ala | Leu | Gln | Gly | Asn | Leu | Val | Ile | 485 | 490 | 495 |

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Met | Leu | Ala | Trp | Pro | Ser | Pro | Trp | Val | Ile | Val | Ile | Gly | Ser | Phe | 500 | 505 | 510 |
| Phe | Ser | Thr | Cys | Gly | Ala | Gly | Leu | Gln | Ser | Leu | Thr | Gly | Ala | Pro | Arg | 515 | 520 | 525 |
| Leu | Leu | Gln | Ala | Ile | Ala | Arg | Asp | Gly | Ile | Ile | Pro | Phe | Leu | Gln | Val | 530 | 535 | 540 |
| Phe | Gly | His | Gly | Lys | Ala | Asn | Gly | Glu | Pro | Thr | Trp | Ala | Leu | Leu | Leu | 545 | 550 | 555 |
| Thr | Ala | Leu | Ile | Cys | Glu | Thr | Gly | Ile | Leu | Ile | Ala | Ser | Leu | Asp | Ser | 565 | 570 | 575 |
| Val | Ala | Pro | Ile | Leu | Ser | Met | Phe | Phe | Xaa | Met | Cys | Tyr | Met | Phe | Val | 580 | 585 | 590 |
| Asn | Leu | Ala | Cys | Ala | Val | Gln | Thr | Leu | Leu | Arg | Thr | Pro | Asn | Trp | Arg | 595 | 600 | 605 |
| Pro | Arg | Phe | Lys | Phe | Tyr | His | Trp | Thr | Leu | Ser | Phe | Leu | Gly | Met | Ser | 610 | 615 | 620 |
| Leu | Cys | Leu | Ala | Leu | Met | Phe | Ile | Cys | Ser | Trp | Tyr | Tyr | Ala | Xaa | Phe | 625 | 630 | 635 |
| Ala | Met | Leu | Ile | Ala | Gly | Cys | Ile | Tyr | Lys | Tyr | Ile | Glu | Tyr | Arg | Gly | 645 | 650 | 655 |
| Ala | Glu | Lys | Glu | Trp | Gly | Asp | Gly | Ile | Arg | Gly | Leu | Ser | Leu | Asn | Ala | 660 | 665 | 670 |
| Ala | Arg | Tyr | Ala | Leu | Leu | Arg | Val | Glu | His | Gly | Pro | Pro | His | Thr | Lys | 675 | 680 | 685 |
| Asn | Trp | Arg | Pro | Gln | Val | Leu | Val | Met | Leu | Asn | Leu | Asp | Ser | Glu | Gln | 690 | 695 | 700 |
| Cys | Val | Lys | His | Pro | Arg | Leu | Leu | Ser | Phe | Thr | Ser | Gln | Leu | Lys | Ala | 705 | 710 | 715 |
| Gly | Lys | Gly | Leu | Thr | Ile | Val | Gly | Ser | Val | Leu | Glu | Gly | Thr | Tyr | Leu | 725 | 730 | 735 |
| Asp | Lys | His | Val | Glu | Ala | Gln | Arg | Ala | Glu | Glu | Asn | Ile | Arg | Ser | Leu | 740 | 745 | 750 |
| Met | Ser | Ala | Glu | Lys | Thr | Lys | Gly | Phe | Cys | Gln | Leu | Val | Val | Ser | Ser | 755 | 760 | 765 |
| Asn | Leu | Arg | Asp | Gly | Ala | Ser | His | Leu | Ile | Gln | Ser | Ala | Gly | Leu | Gly | 770 | 775 | 780 |
| Gly | Met | Lys | His | Asn | Thr | Val | Leu | Met | Ala | Trp | Pro | Glu | Ala | Trp | Lys | 785 | 790 | 795 |

| | | | | | | | | | | | | | | | | |
|------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| Glu | Ala | Asp | Asn | Pro | Phe | Ser | Trp | Lys | Asn | Phe | Val | Asp | Thr | Val | Arg | |
| | | | | 805 | | | | | 810 | | | | | 815 | | |
| Asp | Thr | Thr | Ala | Ala | His | Gln | Ala | Leu | Leu | Val | Ala | Lys | Asn | Ile | Asp | |
| | | | 820 | | | | | 825 | | | | | 830 | | | |
| Leu | Phe | Pro | Gln | Asn | Gln | Glu | Arg | Phe | Ser | Asp | Gly | Asn | Ile | Asp | Val | |
| | | 835 | | | | | 840 | | | | | 845 | | | | |
| Trp | Trp | Ile | Val | His | Asp | Gly | Gly | Met | Leu | Met | Leu | Leu | Pro | Phe | Leu | |
| | | 850 | | | | 855 | | | | | 860 | | | | | |
| Leu | Arg | Gln | His | Lys | Val | Trp | Arg | Lys | Cys | Arg | Met | Arg | Ile | Phe | Thr | |
| 865 | | | | | 870 | | | | | 875 | | | | | 880 | |
| Val | Ala | Gln | Val | Asp | Asp | Asn | Ser | Ile | Gln | Met | Lys | Lys | Asp | Leu | Gln | |
| | | | | 885 | | | | | 890 | | | | | 895 | | |
| Met | Phe | Leu | Tyr | His | Leu | Arg | Ile | Ser | Ala | Glu | Val | Glu | Val | Val | Glu | |
| | | | 900 | | | | | 905 | | | | | 910 | | | |
| Met | Val | Glu | Asn | Asp | Ile | Ser | Ala | Phe | Thr | Tyr | Glu | Lys | Thr | Leu | Met | |
| | | 915 | | | | | 920 | | | | | 925 | | | | |
| Met | Glu | Gln | Arg | Ser | Gln | Met | Leu | Lys | Gln | Met | Gln | Leu | Ser | Lys | Asn | |
| | | 930 | | | | 935 | | | | | 940 | | | | | |
| Glu | Arg | Glu | Arg | Glu | Ala | Gln | Leu | Ile | His | Asp | Arg | Asn | Thr | Ala | Ser | |
| 945 | | | | | 950 | | | | | 955 | | | | | 960 | |
| His | Thr | Thr | Ala | Thr | Ala | Arg | Thr | Gln | Ala | Pro | Pro | Thr | Pro | Asp | Lys | |
| | | | | 965 | | | | | 970 | | | | | 975 | | |
| Val | Gln | Met | Thr | Trp | Thr | Lys | Glu | Lys | Leu | Ile | Ala | Glu | Lys | His | Arg | |
| | | | 980 | | | | | 985 | | | | | 990 | | | |
| Asn | Lys | Asp | Thr | Gly | Pro | Ser | Gly | Phe | Lys | Asp | Leu | Phe | Ser | Leu | Lys | |
| | | 995 | | | | | 1000 | | | | | 1005 | | | | |
| Pro | Asp | Gln | Ser | Asn | Val | Arg | Arg | Met | His | Thr | Ala | Val | Lys | Xaa | Asn | |
| | | 1010 | | | | 1015 | | | | | 1020 | | | | | |
| Gly | Val | Val | Leu | Asn | Lys | Ser | Gln | Asp | Ala | Gln | Leu | Val | Leu | Leu | Asn | |
| 1025 | | | | | 1030 | | | | | 1035 | | | | | 1040 | |
| Met | Pro | Gly | Pro | Pro | Lys | Ser | Arg | Gln | Gly | Asp | Glu | Asn | Tyr | Met | Glu | |
| | | | | 1045 | | | | | 1050 | | | | | 1055 | | |
| Phe | Leu | Glu | Val | Leu | Thr | Glu | Gly | Leu | Asn | Arg | Val | Leu | Leu | Val | Arg | |
| | | | 1060 | | | | | 1065 | | | | | 1070 | | | |
| Gly | Gly | Gly | Arg | Glu | Val | Ile | Thr | Ile | Tyr | Ser | | | | | | |
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Met His Pro Pro
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Glu Thr Thr Thr Lys Met Ala Ser Val Arg Phe Met Val Thr Pro Thr
5 10 15 20

aag atc gat gac att cca ggt ttg tca gac acc agt ccg gac ntc agc 272
Lys Ile Asp Asp Ile Pro Gly Leu Ser Asp Thr Ser Pro Asp Xaa Ser
25 30 35

tct cga tct agt tcc cga gta aga ttt agc tcc cgg gaa agc gtg cct 320
Ser Arg Ser Ser Ser Arg Val Arg Phe Ser Ser Arg Glu Ser Val Pro
40 45 50

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tcg ctg gca act gtt gca ctg gat cca ccc agt gac cgg act tct cac 416
Ser Leu Ala Thr Val Ala Leu Asp Pro Pro Ser Asp Arg Thr Ser His
70 75 80

ccc cag gat gtc atc gag gac ctg agt cag aac tcc atc aca ggg gaa 464
Pro Gln Asp Val Ile Glu Asp Leu Ser Gln Asn Ser Ile Thr Gly Glu
85 90 95 100

cac agc caa ctg tta gac gac gga cat aag aaa gct cga aat gct tat 512
His Ser Gln Leu Leu Asp Asp Gly His Lys Lys Ala Arg Asn Ala Tyr
105 110 115

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| 120 125 130 | |
| ttg gca ctc ttt gag gaa gaa atg gac acc aga ccg aag gtg tct tcc | 608 |
| Leu Ala Leu Phe Glu Glu Glu Met Asp Thr Arg Pro Lys Val Ser Ser | |
| 135 140 145 | |
| ctc ctc aac cgc atg gcc aat tac act aat ctg act caa gga gca aag | 656 |
| Leu Leu Asn Arg Met Ala Asn Tyr Thr Asn Leu Thr Gln Gly Ala Lys | |
| 150 155 160 | |
| gaa cat gaa gag gca gaa aac atc act gaa ggg aaa aag aag ccc acc | 704 |
| Glu His Glu Glu Ala Glu Asn Ile Thr Glu Gly Lys Lys Lys Pro Thr | |
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| aag acc ccc caa atg ggt acc ttc atg ggt gtc tac ctc cca tgt cta | 752 |
| Lys Thr Pro Gln Met Gly Thr Phe Met Gly Val Tyr Leu Pro Cys Leu | |
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| Gln Asn Ile Phe Gly Val Ile Leu Phe Leu Arg Leu Thr Trp Val Val | |
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| Gly Thr Ala Gly Val Leu Gln Ala Phe Ala Ile Val Leu Ile Cys Cys | |
| 215 220 225 | |
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| Cys Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala Ile Ala Thr Asn | |
| 230 235 240 | |
| gga gtg gtg cca gct ggg ggc tca tac ttt atg att tcc cgg gca ctg | 944 |
| Gly Val Val Pro Ala Gly Gly Ser Tyr Phe Met Ile Ser Arg Ala Leu | |
| 245 250 255 260 | |
| ggc cca gag ttt ggt ggg gct gtt ggc ctc tgc ttt tat ctt ggt acc | 992 |
| Gly Pro Glu Phe Gly Gly Ala Val Gly Leu Cys Phe Tyr Leu Gly Thr | |
| 265 270 275 | |
| aca ttt gca gca gcc atg tac atc ctt ggt gcc att gaa atc ttt ctg | 1040 |
| Thr Phe Ala Ala Ala Met Tyr Ile Leu Gly Ala Ile Glu Ile Phe Leu | |
| 280 285 290 | |
| gtc tat atc gtc ccc cga gct gcc atc ttt cac agt gat gac gca ctc | 1088 |
| Val Tyr Ile Val Pro Arg Ala Ala Ile Phe His Ser Asp Asp Ala Leu | |
| 295 300 305 | |
| aag gaa tca gca gcc atg cta aat aac atg cgt gtc tac ggc aca gct | 1136 |
| Lys Glu Ser Ala Ala Met Leu Asn Asn Met Arg Val Tyr Gly Thr Ala | |
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| ttc ttg gtc ctt atg gta tta gtg gta ttt atc ggc gta cgc tat gtg | 1184 |
| Phe Leu Val Leu Met Val Leu Val Val Phe Ile Gly Val Arg Tyr Val | |
| 325 330 335 340 | |

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| Asn Lys Phe Ala Ser Xaa Phe Leu Ala Cys Val Ile Val Ser Ile Leu | |
| 345 350 355 | |
| gcc atc tat gct gga gcc atc aag tct tct ttt gct cct cca cac ttc | 1280 |
| Ala Ile Tyr Ala Gly Ala Ile Lys Ser Ser Phe Ala Pro Pro His Phe | |
| 360 365 370 | |
| ccg gtc tgc atg ctg ggt aac cgc act ctt tca tca aga cac att gac | 1328 |
| Pro Val Cys Met Leu Gly Asn Arg Thr Leu Ser Ser Arg His Ile Asp | |
| 375 380 385 | |
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| Leu Trp Gly Phe Phe Cys Asn Ser Ser Gln Phe Phe Asn Ala Thr Cys | |
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| Asp Glu Tyr Phe Val His Asn Asn Val Thr Ser Ile Gln Gly Ile Pro | |
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| gga ttg gct agt ggt ata att aca gag aat ctt tgg agt aat tac cta | 1520 |
| Gly Leu Ala Ser Gly Ile Ile Thr Glu Asn Leu Trp Ser Asn Tyr Leu | |
| 440 445 450 | |
| ccc aag gga gag atc atc gaa aag cct tca gcc aaa tct tct gat gtc | 1568 |
| Pro Lys Gly Glu Ile Ile Glu Lys Pro Ser Ala Lys Ser Ser Asp Val | |
| 455 460 465 | |
| tta ggc agc tta aac cat gaa tat gtt ctt gtt gac atc acc acc tcc | 1616 |
| Leu Gly Ser Leu Asn His Glu Tyr Val Leu Val Asp Ile Thr Thr Ser | |
| 470 475 480 | |
| ttc acg ctt ctg gtg gga atc ttc ttt ccc tct gtt aca ggt atc atg | 1664 |
| Phe Thr Leu Leu Val Gly Ile Phe Phe Pro Ser Val Thr Gly Ile Met | |
| 485 490 495 500 | |
| gct gga tca aac aga tct gga gat ctg aaa gat gct cag aag tct att | 1712 |
| Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp Ala Gln Lys Ser Ile | |
| 505 510 515 | |
| ccg att ggt act atc ctt gcc atc ctg acc acc tcc ttt gtt tat tta | 1760 |
| Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr Thr Ser Phe Val Tyr Leu | |
| 520 525 530 | |
| agc aat gtt gtc ctt ttt ggt gca tgt att gaa ggg gtt gtt ctc aga | 1808 |
| Ser Asn Val Val Leu Phe Gly Ala Cys Ile Glu Gly Val Val Leu Arg | |
| 535 540 545 | |
| gac aag ttc ggt gat gct gtg aaa ggt aat ttg gtg gta ggc acc tta | 1856 |
| Asp Lys Phe Gly Asp Ala Val Lys Gly Asn Leu Val Val Gly Thr Leu | |
| 550 555 560 | |

| | |
|-----------------------------------------------------------------|------|
| tct tgg cca tcc cca tgg gtg att gtt att ggc tcc ttc ttt tca aca | 1904 |
| Ser Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser Phe Phe Ser Thr | |
| 565 570 575 580 | |
| tgt ggg gct gga ctt cag agc ctc aca ggt gca ccg agg ctg cta caa | 1952 |
| Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala Pro Arg Leu Leu Gln | |
| 585 590 595 | |
| gct att gcc aag gat aac atc ata ccg ttt ctg agg gtt ttt ggc cac | 2000 |
| Ala Ile Ala Lys Asp Asn Ile Ile Pro Phe Leu Arg Val Phe Gly His | |
| 600 605 610 | |
| agc aaa gcc aat ggg gaa cct acc tgg gct tta ctt cta act gct gcc | 2048 |
| Ser Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu Leu Thr Ala Ala | |
| 615 620 625 | |
| att gca gag ctt gga ata ctc att gcc tcc ctg gat ctt gtg gcc cca | 2096 |
| Ile Ala Glu Leu Gly Ile Leu Ile Ala Ser Leu Asp Leu Val Ala Pro | |
| 630 635 640 | |
| att ctt tcc atg ttt ttt ctc atg tgt tac ctc ttt gta aac ttg gca | 2144 |
| Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu Phe Val Asn Leu Ala | |
| 645 650 655 660 | |
| tgt gcc ttg caa aca tta ctt cga aca ccc aac tgg aga ccc cga ttc | 2192 |
| Cys Ala Leu Gln Thr Leu Leu Arg Thr Pro Asn Trp Arg Pro Arg Phe | |
| 665 670 675 | |
| cgc tac tac cat tgg gcc ctt tct ttc atg gga atg agt atc tgt ctg | 2240 |
| Arg Tyr Tyr His Trp Ala Leu Ser Phe Met Gly Met Ser Ile Cys Leu | |
| 680 685 690 | |
| gct ctg atg ttc att tct tcc tgg tat tat gcc att gta gcc atg gta | 2288 |
| Ala Leu Met Phe Ile Ser Ser Trp Tyr Tyr Ala Ile Val Ala Met Val | |
| 695 700 705 | |
| ata gct ggt atg atc tac aag tac att gaa tac caa gga gct gag aaa | 2336 |
| Ile Ala Gly Met Ile Tyr Lys Tyr Ile Glu Tyr Gln Gly Ala Glu Lys | |
| 710 715 720 | |
| gaa tgg ggt gat ggt atc cgt ggg ctg tcc ctc agt gca gcc cgg ttt | 2384 |
| Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser Ala Ala Arg Phe | |
| 725 730 735 740 | |
| gct ttg ctt cga ttg gag gaa gga cct cca cac act aaa aac tgg agg | 2432 |
| Ala Leu Leu Arg Leu Glu Glu Gly Pro Pro His Thr Lys Asn Trp Arg | |
| 745 750 755 | |
| cct cag ttg ctt gta tta ctg aaa cta gat gaa gac tta cat gtc aag | 2480 |
| Pro Gln Leu Leu Val Leu Leu Lys Leu Asp Glu Asp Leu His Val Lys | |
| 760 765 770 | |
| cat cct cgc ctc ctc acc ttt gcc tca cag ctc aaa gca gga aaa ggt | 2528 |
| His Pro Arg Leu Leu Thr Phe Ala Ser Gln Leu Lys Ala Gly Lys Gly | |
| 775 780 785 | |

| | |
|-----------------------------------------------------------------|------|
| ntc act att gtg ggc tct gtc atc gtg ggg aac ttc cta gag aac tac | 2576 |
| Xaa Thr Ile Val Gly Ser Val Ile Val Gly Asn Phe Leu Glu Asn Tyr | |
| 790 795 800 | |
| ggg gaa gct tta gct gct gag cag acc ata aag cac cta atg gag gca | 2624 |
| Gly Glu Ala Leu Ala Ala Glu Gln Thr Ile Lys His Leu Met Glu Ala | |
| 805 810 815 820 | |
| gag aag gta aaa gga ttc tgc cag ctg gtg gtg gcc gcc aag ctg aga | 2672 |
| Glu Lys Val Lys Gly Phe Cys Gln Leu Val Val Ala Ala Lys Leu Arg | |
| 825 830 835 | |
| gag ggc att tcc cac ctc atc cag tca tgt ggc ctt ggg ggc atg aag | 2720 |
| Glu Gly Ile Ser His Leu Ile Gln Ser Cys Gly Leu Gly Gly Met Lys | |
| 840 845 850 | |
| cac aac acg gtg gtg atg ggc tgg cct aat ggc tgg cgt caa agc gaa | 2768 |
| His Asn Thr Val Val Met Gly Trp Pro Asn Gly Trp Arg Gln Ser Glu | |
| 855 860 865 | |
| gat gcc cgc gct tgg aag act ttt att ggc aca gtt cga gtg aca act | 2816 |
| Asp Ala Arg Ala Trp Lys Thr Phe Ile Gly Thr Val Arg Val Thr Thr | |
| 870 875 880 | |
| gct gcc cat ctt gca ctg ctg gtg gct aaa aac atc tcc ttc ttt ccc | 2864 |
| Ala Ala His Leu Ala Leu Leu Val Ala Lys Asn Ile Ser Phe Phe Pro | |
| 885 890 895 900 | |
| agc aat gtg gag caa ttt tct gag ggc aac att gat gtg tgg tgg att | 2912 |
| Ser Asn Val Glu Gln Phe Ser Glu Gly Asn Ile Asp Val Trp Trp Ile | |
| 905 910 915 | |
| gtg cat gat ggg ggg atg ctt atg cta cta cca ttc cta ctg aaa cag | 2960 |
| Val His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu Leu Lys Gln | |
| 920 925 930 | |
| cac aag gtg tgg cga aag tgc agc ata cgg atc ttc aca gta gcc caa | 3008 |
| His Lys Val Trp Arg Lys Cys Ser Ile Arg Ile Phe Thr Val Ala Gln | |
| 935 940 945 | |
| tta gaa gac aac agt atc caa atg aag aag gac cta gcc acc ttc cta | 3056 |
| Leu Glu Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Ala Thr Phe Leu | |
| 950 955 960 | |
| tat cac tta cgc att gag gcg gag gta gaa gtg gtg gag atg cat gac | 3104 |
| Tyr His Leu Arg Ile Glu Ala Glu Val Glu Val Val Glu Met His Asp | |
| 965 970 975 980 | |
| agt gat ata tca gca tat act tac gag cgc act ttg atg atg gaa caa | 3152 |
| Ser Asp Ile Ser Ala Tyr Thr Tyr Glu Arg Thr Leu Met Met Glu Gln | |
| 985 990 995 | |
| agg tcc cag atg ctt cgg cac atg cgg cta tcc aaa aca gag cga gac | 3200 |
| Arg Ser Gln Met Leu Arg His Met Arg Leu Ser Lys Thr Glu Arg Asp | |
| 1000 1005 1010 | |

| | |
|--------------------------------------------------------------------|------|
| aga gag gca caa ttg gtg aaa gac cga aac tca atg cta cga ttg acc | 3248 |
| Arg Glu Ala Gln Leu Val Lys Asp Arg Asn Ser Met Leu Arg Leu Thr | |
| 1015 1020 1025 | |
| agc att ggc tct gat gag gac gaa gag aca gaa acc tat cag gag aag | 3296 |
| Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr Glu Thr Tyr Gln Glu Lys | |
| 1030 1035 1040 | |
| gtg cac atg act tgg aca aaa gac aag tac atg gca tcc cgg gga caa | 3344 |
| Val His Met Thr Trp Thr Lys Asp Lys Tyr Met Ala Ser Arg Gly Gln | |
| 1045 1050 1055 1060 | |
| aaa gcg aag tca atg gaa gga ttc cag gac ctg ctt aac atg cgt ccg | 3392 |
| Lys Ala Lys Ser Met Glu Gly Phe Gln Asp Leu Leu Asn Met Arg Pro | |
| 1065 1070 1075 | |
| gac cag tcc aat gtg agg cgg atg cat aca gca gtg aaa ctc aac gag | 3440 |
| Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val Lys Leu Asn Glu | |
| 1080 1085 1090 | |
| gtt ata gtt aac aag tcc cat gaa gca aag ctg gtt tta ttg aat atg | 3488 |
| Val Ile Val Asn Lys Ser His Glu Ala Lys Leu Val Leu Leu Asn Met | |
| 1095 1100 1105 | |
| cca ggg cca ccc cga aac cct gag ggt gat gaa aac tac atg gag ttc | 3536 |
| Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp Glu Asn Tyr Met Glu Phe | |
| 1110 1115 1120 | |
| cta gag gtg ctt acc gag gga cta gag cga gtc cta ctt gtc cgg ggt | 3584 |
| Leu Glu Val Leu Thr Glu Gly Leu Glu Arg Val Leu Leu Val Arg Gly | |
| 1125 1130 1135 1140 | |
| ggt ggc agt gaa gtg atc acc att tat tca taacctactc tgaatgaccg | 3634 |
| Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser | |
| 1145 1150 | |
| tgcttgacct gttttcttaa aaggcctacg tcttccatgg aagtgccagc tcattactac | 3694 |
| cactcccact caactagaag cctgtgttct gtacacatca tactgaactc ttgatgagct | 3754 |
| gagcctcaag tacctgtgta aaagagctcc catctgatct gcagtcatta cagaaaaagc | 3814 |
| aaatattccc tcaacatcag aacaatgctc aagtctttca agccactgtc tgagcagtca | 3874 |
| aaggcaaatt agaattaaca agctgagcca ataaatgaat tggtaaaagg gatgctagaa | 3934 |
| attcaactga agaaaaaaag caagtcaagt acgtattcag cattaaagat gaatctcaga | 3994 |
| agtcatgggt caatgttgac actgtgagga taacaactag agacagcttc atcttactaa | 4054 |
| agaatttatg gtcaagtata tttggaccta ttatcctcgg caagccaaga tgcaaacatt | 4114 |
| ttttagctat atttcttttag tatacccact gctgtaattt tatattagga tactaacttg | 4174 |
| aaacatggct gcagcctcta cttcttcaaa aacatcccc caaaatacca gatttaaata | 4234 |
| tccaaaaaaa aaaaaaaaaa aaaaaa | 4260 |

<210> 16
<211> 1150
<212> PRT
<213> Homo sapiens

<220>
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<222> (35)
<223> Xaa=Leu or Ile

<220>
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<222> (346)
<223> Xaa=Leu or Ile

<220>
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<222> (789)
<223> Xaa=Leu or Ile

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Met His Pro Pro Glu Thr Thr Thr Lys Met Ala Ser Val Arg Phe Met
1 5 10 15
Val Thr Pro Thr Lys Ile Asp Asp Ile Pro Gly Leu Ser Asp Thr Ser
20 25 30
Pro Asp Xaa Ser Ser Arg Ser Ser Ser Arg Val Arg Phe Ser Ser Arg
35 40 45
Glu Ser Val Pro Glu Thr Ser Arg Ser Glu Pro Met Ser Glu Met Ser
50 55 60
Gly Ala Thr Thr Ser Leu Ala Thr Val Ala Leu Asp Pro Pro Ser Asp
65 70 75 80
Arg Thr Ser His Pro Gln Asp Val Ile Glu Asp Leu Ser Gln Asn Ser
85 90 95
Ile Thr Gly Glu His Ser Gln Leu Leu Asp Asp Gly His Lys Lys Ala
100 105 110
Arg Asn Ala Tyr Leu Asn Asn Ser Asn Tyr Glu Glu Gly Asp Glu Tyr
115 120 125
Phe Asp Lys Asn Leu Ala Leu Phe Glu Glu Glu Met Asp Thr Arg Pro
130 135 140
Lys Val Ser Ser Leu Leu Asn Arg Met Ala Asn Tyr Thr Asn Leu Thr
145 150 155 160
Gln Gly Ala Lys Glu His Glu Glu Ala Glu Asn Ile Thr Glu Gly Lys
165 170 175

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Lys | Pro | Thr | Lys | Thr | Pro | Gln | Met | Gly | Thr | Phe | Met | Gly | Val | Tyr | 180 | 185 | 190 |
| Leu | Pro | Cys | Leu | Gln | Asn | Ile | Phe | Gly | Val | Ile | Leu | Phe | Leu | Arg | Leu | 195 | 200 | 205 |
| Thr | Trp | Val | Val | Gly | Thr | Ala | Gly | Val | Leu | Gln | Ala | Phe | Ala | Ile | Val | 210 | 215 | 220 |
| Leu | Ile | Cys | Cys | Cys | Cys | Thr | Met | Leu | Thr | Ala | Ile | Ser | Met | Ser | Ala | 225 | 230 | 235 |
| Ile | Ala | Thr | Asn | Gly | Val | Val | Pro | Ala | Gly | Gly | Ser | Tyr | Phe | Met | Ile | 245 | 250 | 255 |
| Ser | Arg | Ala | Leu | Gly | Pro | Glu | Phe | Gly | Gly | Ala | Val | Gly | Leu | Cys | Phe | 260 | 265 | 270 |
| Tyr | Leu | Gly | Thr | Thr | Phe | Ala | Ala | Ala | Met | Tyr | Ile | Leu | Gly | Ala | Ile | 275 | 280 | 285 |
| Glu | Ile | Phe | Leu | Val | Tyr | Ile | Val | Pro | Arg | Ala | Ala | Ile | Phe | His | Ser | 290 | 295 | 300 |
| Asp | Asp | Ala | Leu | Lys | Glu | Ser | Ala | Ala | Met | Leu | Asn | Asn | Met | Arg | Val | 305 | 310 | 315 |
| Tyr | Gly | Thr | Ala | Phe | Leu | Val | Leu | Met | Val | Leu | Val | Val | Phe | Ile | Gly | 325 | 330 | 335 |
| Val | Arg | Tyr | Val | Asn | Lys | Phe | Ala | Ser | Xaa | Phe | Leu | Ala | Cys | Val | Ile | 340 | 345 | 350 |
| Val | Ser | Ile | Leu | Ala | Ile | Tyr | Ala | Gly | Ala | Ile | Lys | Ser | Ser | Phe | Ala | 355 | 360 | 365 |
| Pro | Pro | His | Phe | Pro | Val | Cys | Met | Leu | Gly | Asn | Arg | Thr | Leu | Ser | Ser | 370 | 375 | 380 |
| Arg | His | Ile | Asp | Val | Cys | Ser | Lys | Thr | Lys | Glu | Ile | Asn | Asn | Met | Thr | 385 | 390 | 395 |
| Val | Pro | Ser | Lys | Leu | Trp | Gly | Phe | Phe | Cys | Asn | Ser | Ser | Gln | Phe | Phe | 405 | 410 | 415 |
| Asn | Ala | Thr | Cys | Asp | Glu | Tyr | Phe | Val | His | Asn | Asn | Val | Thr | Ser | Ile | 420 | 425 | 430 |
| Gln | Gly | Ile | Pro | Gly | Leu | Ala | Ser | Gly | Ile | Ile | Thr | Glu | Asn | Leu | Trp | 435 | 440 | 445 |
| Ser | Asn | Tyr | Leu | Pro | Lys | Gly | Glu | Ile | Ile | Glu | Lys | Pro | Ser | Ala | Lys | 450 | 455 | 460 |
| Ser | Ser | Asp | Val | Leu | Gly | Ser | Leu | Asn | His | Glu | Tyr | Val | Leu | Val | Asp | 465 | 470 | 475 |
| | | | | | | | | | | | | | | | | 480 | | |

| | | | |
|-----------------------------------------------------------------|-----|-----|-----|
| Ile Thr Thr Ser Phe Thr Leu Leu Val Gly Ile Phe Phe Pro Ser Val | 485 | 490 | 495 |
| Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Lys Asp Ala | 500 | 505 | 510 |
| Gln Lys Ser Ile Pro Ile Gly Thr Ile Leu Ala Ile Leu Thr Thr Ser | 515 | 520 | 525 |
| Phe Val Tyr Leu Ser Asn Val Val Leu Phe Gly Ala Cys Ile Glu Gly | 530 | 535 | 540 |
| Val Val Leu Arg Asp Lys Phe Gly Asp Ala Val Lys Gly Asn Leu Val | 545 | 550 | 555 |
| Val Gly Thr Leu Ser Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser | 565 | 570 | 575 |
| Phe Phe Ser Thr Cys Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala Pro | 580 | 585 | 590 |
| Arg Leu Leu Gln Ala Ile Ala Lys Asp Asn Ile Ile Pro Phe Leu Arg | 595 | 600 | 605 |
| Val Phe Gly His Ser Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu | 610 | 615 | 620 |
| Leu Thr Ala Ala Ile Ala Glu Leu Gly Ile Leu Ile Ala Ser Leu Asp | 625 | 630 | 635 |
| Leu Val Ala Pro Ile Leu Ser Met Phe Phe Leu Met Cys Tyr Leu Phe | 645 | 650 | 655 |
| Val Asn Leu Ala Cys Ala Leu Gln Thr Leu Leu Arg Thr Pro Asn Trp | 660 | 665 | 670 |
| Arg Pro Arg Phe Arg Tyr Tyr His Trp Ala Leu Ser Phe Met Gly Met | 675 | 680 | 685 |
| Ser Ile Cys Leu Ala Leu Met Phe Ile Ser Ser Trp Tyr Tyr Ala Ile | 690 | 695 | 700 |
| Val Ala Met Val Ile Ala Gly Met Ile Tyr Lys Tyr Ile Glu Tyr Gln | 705 | 710 | 715 |
| Gly Ala Glu Lys Glu Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser | 725 | 730 | 735 |
| Ala Ala Arg Phe Ala Leu Leu Arg Leu Glu Glu Gly Pro Pro His Thr | 740 | 745 | 750 |
| Lys Asn Trp Arg Pro Gln Leu Leu Val Leu Leu Lys Leu Asp Glu Asp | 755 | 760 | 765 |
| Leu His Val Lys His Pro Arg Leu Leu Thr Phe Ala Ser Gln Leu Lys | 770 | 775 | 780 |

| | | | | |
|-----------------------------------------------------------------|------|------|------|------|
| Ala Gly Lys Gly Xaa Thr Ile Val Gly Ser Val Ile Val Gly Asn Phe | 785 | 790 | 795 | 800 |
| Leu Glu Asn Tyr Gly Glu Ala Leu Ala Ala Glu Gln Thr Ile Lys His | 805 | 810 | 815 | |
| Leu Met Glu Ala Glu Lys Val Lys Gly Phe Cys Gln Leu Val Val Ala | 820 | 825 | 830 | |
| Ala Lys Leu Arg Glu Gly Ile Ser His Leu Ile Gln Ser Cys Gly Leu | 835 | 840 | 845 | |
| Gly Gly Met Lys His Asn Thr Val Val Met Gly Trp Pro Asn Gly Trp | 850 | 855 | 860 | |
| Arg Gln Ser Glu Asp Ala Arg Ala Trp Lys Thr Phe Ile Gly Thr Val | 865 | 870 | 875 | 880 |
| Arg Val Thr Thr Ala Ala His Leu Ala Leu Leu Val Ala Lys Asn Ile | 885 | 890 | 895 | |
| Ser Phe Phe Pro Ser Asn Val Glu Gln Phe Ser Glu Gly Asn Ile Asp | 900 | 905 | 910 | |
| Val Trp Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu Pro Phe | 915 | 920 | 925 | |
| Leu Leu Lys Gln His Lys Val Trp Arg Lys Cys Ser Ile Arg Ile Phe | 930 | 935 | 940 | |
| Thr Val Ala Gln Leu Glu Asp Asn Ser Ile Gln Met Lys Lys Asp Leu | 945 | 950 | 955 | 960 |
| Ala Thr Phe Leu Tyr His Leu Arg Ile Glu Ala Glu Val Glu Val Val | 965 | 970 | 975 | |
| Glu Met His Asp Ser Asp Ile Ser Ala Tyr Thr Tyr Glu Arg Thr Leu | 980 | 985 | 990 | |
| Met Met Glu Gln Arg Ser Gln Met Leu Arg His Met Arg Leu Ser Lys | 995 | 1000 | 1005 | |
| Thr Glu Arg Asp Arg Glu Ala Gln Leu Val Lys Asp Arg Asn Ser Met | 1010 | 1015 | 1020 | |
| Leu Arg Leu Thr Ser Ile Gly Ser Asp Glu Asp Glu Glu Thr Glu Thr | 1025 | 1030 | 1035 | 1040 |
| Tyr Gln Glu Lys Val His Met Thr Trp Thr Lys Asp Lys Tyr Met Ala | 1045 | 1050 | 1055 | |
| Ser Arg Gly Gln Lys Ala Lys Ser Met Glu Gly Phe Gln Asp Leu Leu | 1060 | 1065 | 1070 | |
| Asn Met Arg Pro Asp Gln Ser Asn Val Arg Arg Met His Thr Ala Val | 1075 | 1080 | 1085 | |

Lys Leu Asn Glu Val Ile Val Asn Lys Ser His Glu Ala Lys Leu Val
1090 1095 1100

Leu Leu Asn Met Pro Gly Pro Pro Arg Asn Pro Glu Gly Asp Glu Asn
1105 1110 1115 1120

Tyr Met Glu Phe Leu Glu Val Leu Thr Glu Gly Leu Glu Arg Val Leu
1125 1130 1135

Leu Val Arg Gly Gly Gly Ser Glu Val Ile Thr Ile Tyr Ser
1140 1145 1150

<210> 17
<211> 712
<212> DNA
<213> Homo sapiens

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<222> (74)
<223> n=a, c, g, or t

<220>
<221> misc_feature
<222> (250)
<223> n=a, c, g, or t

<400> 17
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gggttatattt ttncggttat gcatgtgcac ctttcccacc agaccaagt ggattgtcga 120
catcaaaaac accgggtggc tttgcataca cttccccca gccagacctg tgggggtattc 180
acctgatacn caacaggtgg ccgggtgtac accttttagc aatctgatcc acgctatagt 240
cgcctgataa aggtttgcct gcacgcactt ggcccaacta gaaccctggg gacactcacc 300
agataaagga cttacctcga caggaaactg ggggctgagg ggaggaggc ttcatctgct 360
gccctgagac catggcactg agccttcagc cccggaccag aggggttagc taggtagctc 420
ttcattctga aggaaagaag tcacacaaga ttggcattgt tttgtctttt tgttttttgt 480
ttttttctct cttaaaaaat atattcacct attgggtgatg cactttctag gacagtcggc 540
ttgaattctg agtagaagta ttcttagttg gggctttgtg tgtggtgtga atcaaggtta 600
ttgaaatgtg ttatttttca agttatcttt tgtattgcag tcaaaagtag ctagcgtaag 660
aggaagattt tgcgaggttc cccccacttt tttgttctt aaaaagaaca aa 712

<210> 18
<211> 1014

<212> DNA
<213> mouse

<220>
<221> misc_feature
<222> (525)
<223> n=a, c, g, or t

<400> 18
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cgttatgcat gcgcatctct cccaccagac ccaagtggat tatcgacctc aaaaacatcg 180
gggtggctcag cacacacctc ctcccagcca gacctgtggg gtattcacct gatacacaac 240
aggtggctgg tgcacacctt tgcgcaatct gatccacgct cttatacgcc tgataagggt 300
gggcctgcat gctccgtcct cagctagaac cgtgggacac tcggcagata aaggactaac 360
tacctcatcc ggaccctggg gggtgagcag agggaggcgt caccagctgc tgtgagatca 420
tggcacggag cccacagccc tggaccaggg gagatagcta ggattctgaa agaaccaagt 480
tatacaggat tagcatcggt ttgttcttat tttgttttct cgaanattat ttttcagtta 540
ctggtggggc actttataaa acagctggct tgaattctat acacggattc ttaattgggc 600
ctttgtgggc tgtaaatacag ggtaattgag ggtttttggg tttttttccc cttctatttt 660
tgcaatcaga agtagctagt gtaggaggaa gagtttttgt gagcttttcc ttttttcttt 720
gtcaaaaagg aaaggggggg gaaaatgcat ccaccagaag ccaccaccaa gatgtcctca 780
gttcggttca tggtgacacc aactaagatt gatgacattc caggtttgtc agacaccagc 840
ccggacctca gctctcggtc tagttctcga gtaagattta gctcccgaga aagtgtgcca 900
gaaacaagcc gtagtgagcc tatgagcgaa ctgtctgggg ctactacttc tctggcaact 960
gttgccctag atccttcag tgaccggact tctaatcccc aggatgttac ggag 1014

<210> 19
<211> 744
<212> DNA
<213> mouse

<220>
<221> misc_feature
<222> (574)
<223> n=a, c, g, or t

<400> 19
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catatgcttt gaacttaagc aacaatggaa accgtccttt tgttttctga gttgacatag 120
tgccagtctt cattaaagag ggtagtttgt gaaataaagt gttccctgat ctttctcgtg 180
tgaagtaaaa ggacagatga tgagtaaggt tgagatgatg gaaccagag aagtggcaat 240
aaattaaagg aaacaagtgg gagacacagg gtggacagct cttgatgagc tcacgggctt 300
tagctttctg cgcctggag aaactgcca gacagttgga gttctacagg ttaataacaa 360
taagctgggg tggagtgctt aagcctttta agagaatgat aaacagggcg gaaggcgtgt 420
cttcaagcgt ccactccct tggggctatg gtcacgtggg ctcagtactt cccgattccc 480
agccactgtc tccctaggct gtgctctgag tgtggagga gagaggcagg gacgcacggg 540
aaggaaattt aaacgctgaa agcaagggtc tgtntgtaag aacaatgccg cacttcactg 600
tgaccaaggt agaagacca gaggagggg cagctggccc cctctctcct gagcccagct 660
cagcagaagt aaaagcccg attcaggatc cccaagaacc aggtaagtcc tgcgcttgta 720
gcgtcggggg acccacagac tagt 744

<210> 20
<211> 52
<212> DNA
<213> Homo sapiens

<400> 20
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<210> 21
<211> 95
<212> DNA
<213> Homo sapiens

<400> 21
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<210> 22
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<212> DNA
<213> Homo sapiens

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aagccggtgc ag 132

<210> 23
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<212> DNA
<213> Homo sapiens

<400> 23
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tgcatggtgt tcatctgctg ctctgt 147

<210> 24
<211> 55
<212> DNA
<213> Homo sapiens

<400> 24
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<210> 25
<211> 131
<212> DNA
<213> Homo sapiens

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aaatcctgct g 131

<210> 26
<211> 242
<212> DNA
<213> Homo sapiens

<400> 26
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gtgtttgtgg gtgtcaagta tgtcaacaag tttgcccttg tcttctggg ttgtgtcatc 180
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<210> 27
<211> 212

<212> DNA
<213> Homo sapiens

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catccttggt gctgccagtg gcctcatcaa ag 212

<210> 28
<211> 171
<212> DNA
<213> Homo sapiens

<400> 28
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tgacctcta cttaccctg ctggttgga tctactccc ctcagtcaca g 171

<210> 29
<211> 99
<212> DNA
<213> Homo sapiens

<400> 29
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ctggcaccat cctggccatc gccaccacct ctgctgtct 99

<210> 30
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<212> DNA
<213> Homo sapiens

<400> 30
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<210> 31
<211> 175
<212> DNA
<213> Homo sapiens

<400> 31
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<210> 32
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<212> DNA
<213> Homo sapiens

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<210> 33
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<212> DNA
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gacaccaac tggaggccac gctttcgata ttaccactg 99

<210> 34
<211> 120
<212> DNA
<213> Homo sapiens

<400> 34
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ttatgcactg gtagccatgc tcattgctgg actcatctac aagtacattg agtaccgtgg 120

<210> 35
<211> 105
<212> DNA
<213> Homo sapiens

<400> 35
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cctcttacgc ctggaggaag ggccccaca caccaagaac tggag 105

<210> 36
<211> 169
<212> DNA
<213> Homo sapiens

<400> 36
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<210> 37
<211> 196
<212> DNA
<213> Homo sapiens

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cacaacactg tgcttggttg ctggccccgc aactggcgcc agaaggaaga tcatcagacg 180
tggaggaact tcattg 196

<210> 38
<211> 170
<212> DNA
<213> Homo sapiens

<400> 38
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<210> 39
<211> 132
<212> DNA
<213> Homo sapiens

<400> 39
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tggttgagga tg 132

<210> 40
<211> 231
<212> DNA
<213> Homo sapiens

<400> 40
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aacgtcccag aagagacggc tggtgacagt gaagagaagc cagaggagga g 231

<210> 41
<211> 215
<212> DNA
<213> Homo sapiens

<400> 41
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gacaagtcgg tggcagagaa gaataagggc cccagtcctg tctcctctga gggcatcaag 180
gacttcttca gcatgaagcc ggagtgggag aactt 215

<210> 42
<211> 134
<212> DNA
<213> Homo sapiens

<400> 42
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gaaatcccgg gacgccaagc ttgttttggc caacatgcct gggcctcccc gcaaccgcaa 120
tggtgatgaa aact 134

<210> 43
<211> 92
<212> DNA
<213> Homo sapiens

<400> 43
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gcggccgcga ggtcatcacc atctactcct ga 92

<210> 44
<211> 290
<212> DNA
<213> Homo sapiens

<400> 44
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cgacacagag aagggaagg agtatgatgg caagaacatg gccttggttg aggtgggctg 180
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<210> 45
<211> 259
<212> DNA
<213> Homo sapiens

<400> 45
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tggaagaaaa gggacggat 259

<210> 46
<211> 315
<212> DNA
<213> Homo sapiens

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gaggtgggag gatgg 315

<210> 47
<211> 249
<212> DNA
<213> Homo sapiens

<400> 47
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gatggctggg tggaaggagg gatagtgcc tgggctttgg gggacatcaa ggccaagag 240
agataatat 249

<210> 48
<211> 305
<212> DNA
<213> Homo sapiens

<400> 48
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cctctgcttc tacctgggca ctacctttgc aggagccatg tacatcctgg gcaccatcga 240
aatcctgctg gtaagagagg ctgaggagga ggtgtggaac cccaggttgt cagtcagtta 300
atcag 305

<210> 49
<211> 503
<212> DNA
<213> Homo sapiens

<400> 49
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ctccatcctg gccatctatg ctgggggtcat caagtctgcc ttcgaccac ccaacttccc 360
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<210> 50
<211> 387
<212> DNA
<213> Homo sapiens

<400> 50
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ccccttatgg ctggcctccc cctgagcatt ctgtctcccc acagagaacc tctggagctc 120
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<210> 51
 <211> 313
 <212> DNA
 <213> Homo sapiens

<400> 51
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 gctggttcta accgctctgg ggacctgagg gatgccaga agtcaatccc cactggcacc 180
 atcctggcca tcgccaccac ctctgctgtc tgtatcctgc acagctgtgc tgggaccacc 240
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 ggggtggggag ggg 313

<210> 52
 <211> 132
 <212> DNA
 <213> Homo sapiens

<400> 52
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 aagataattg gggttgatcc tattctgggg gaggggtggg tatagaaggc tgagttctgg 120
 gaaacagacc ca 132

<210> 53
 <211> 365
 <212> DNA
 <213> Homo sapiens

<400> 53
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cataa 365

<210> 54
<211> 209
<212> DNA
<213> Homo sapiens

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ccgacctggg ccctgctcct gactgcctgc atctgcgaga ttggcatcct cattgcatcc 180
ctcgacgagg tggcccccat cctctctat 209

<210> 55
<211> 209
<212> DNA
<213> Homo sapiens

<400> 55
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ttccactgag ccacttgctc acctccacgc caatcctcac cttactccag tccatcccct 180
ctgggtctaa ggaccccaaa cctgaagag 209

<210> 56
<211> 336
<212> DNA
<213> Homo sapiens

<400> 56
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aggacactta ggaagacagt ctctatcctt ttgtac 336

<210> 57
<211> 272
<212> DNA

<213> Homo sapiens

<400> 57

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<210> 58

<211> 328

<212> DNA

<213> Homo sapiens

<400> 58

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cgtgagtgtg tgcacgtgtg agtgtgtgtg tgcattgtatg catttgtgtg catatgtgca 300
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<210> 59

<211> 303

<212> DNA

<213> Homo sapiens

<400> 59

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<210> 60

<211> 295

<212> DNA

<213> Homo sapiens

<400> 60
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<210> 61
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 <212> DNA
 <213> Homo sapiens

<400> 61
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<210> 62
 <211> 346
 <212> DNA
 <213> Homo sapiens

<400> 62
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<210> 63
 <211> 2733
 <212> DNA
 <213> Homo sapiens

<400> 63

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 <211> 304
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 <213> Homo sapiens

<400> 64
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<210> 65
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<212> DNA
<213> Homo sapiens

<400> 65

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<210> 66
<211> 180
<212> DNA
<213> Homo sapiens

<400> 66

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<210> 67
<211> 272
<212> DNA
<213> Homo sapiens

<400> 67

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<210> 68
<211> 359
<212> DNA
<213> Homo sapiens

<400> 68

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<210> 69
<211> 378
<212> DNA
<213> Homo sapiens

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<210> 70
<211> 320
<212> DNA
<213> Homo sapiens

<400> 70
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<210> 71
<211> 302
<212> DNA
<213> Homo sapiens

<400> 71
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<211> 304
<212> DNA
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<210> 73
<211> 263
<212> DNA
<213> Homo sapiens

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<210> 74
<211> 249
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<400> 74
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<210> 75
<211> 264
<212> DNA
<213> Homo sapiens

<400> 75
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<210> 76
<211> 290
<212> DNA
<213> Homo sapiens

<400> 76
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<210> 77
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<212> DNA
<213> Homo sapiens

<400> 77
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<210> 78
<211> 372
<212> DNA
<213> Homo sapiens

<400> 78
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<210> 79
<211> 321
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<210> 80
<211> 262
<212> DNA
<213> Homo sapiens

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<210> 81
<211> 318
<212> DNA
<213> Homo sapiens

<400> 81
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<210> 82
<211> 299
<212> DNA
<213> Homo sapiens

<400> 82
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<210> 83
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<400> 83
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 <212> DNA
 <213> Homo sapiens

<400> 84
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<210> 85
 <211> 291
 <212> DNA
 <213> Homo sapiens

<400> 85
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<210> 86
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<400> 86

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<210> 87
<211> 366
<212> DNA
<213> Homo sapiens

<400> 87
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<210> 88
<211> 342
<212> DNA
<213> Homo sapiens

<400> 88
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<210> 89
<211> 238
<212> DNA
<213> Homo sapiens

<400> 89

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<210> 90
<211> 167
<212> DNA
<213> Homo sapiens

<400> 90
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<210> 91
<211> 359
<212> DNA
<213> Homo sapiens

<400> 91
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<210> 92
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<212> DNA
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<400> 92
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<211> 363
<212> DNA
<213> Homo sapiens

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<210> 94
<211> 291
<212> DNA
<213> Homo sapiens

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acctccttca cgcttctggg gggaatcttc tttccctctg ttacaggtaa acacataggc 240
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<211> 250
<212> DNA
<213> Homo sapiens

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aagatgctca gaagtctatt ccgattggta ctatccttgc catcctgacc acctcctttg 180
tttgtatcct ttttatggat ccagtctgag tcttagtcat aggagcatcc agtagaacta 240

agatgatcag

250

<210> 96
<211> 205
<212> DNA
<213> Homo sapiens

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ggttgttctc agagacaagt gagtaatgaa tttctttgta acaattatgt gtgtgtctgc 180
catgacttct gatcattcca catag 205

<210> 97
<211> 449
<212> DNA
<213> Homo sapiens

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gctcacttgc tgaaagccgc ccgcccgcct gcccgctgc ctgcagggtc ggggaggccc 180
tgcaggggaa cctggtcatc ggcatgctgg cctggccctc cccctgggtc atcgtcatcg 240
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tgcaggccat tgcccgtgac ggcatcgctc ccttctgca ggtgagtccc gcaccctcgt 360
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agccgtgtgt gggacgcatg cccgcggct 449

<210> 98
<211> 304
<212> DNA
<213> Homo sapiens

<400> 98
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cccatgggtg attgttattg gctccttctt ttcaacatgt ggggctggac ttcagagcct 180
cacaggtgca ccgaggctgc tacaagctat tgccaaggat aacatcatac cgtttctgag 240
ggtgagtgac cttttattat gccctcttct ttttttccca gctttaatga gaaacagtgt 300

<210> 99
<211> 249
<212> DNA
<213> Homo sapiens

<400> 99
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acagggttttt ggccacagca aagccaatgg ggaacctacc tgggctttac ttctaactgc 120
tgccattgca gagcttgaa tactcattgc ctccctggat cttgtggccc caattctttc 180
catgtaagag ccagtgattc ttttcagtta ttcttgctta aatgataaat aatacatgtt 240
tatttccat 249

<210> 100
<211> 255
<212> DNA
<213> Homo sapiens

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ggcatgtgcc ttgcaaakat tacttcgaac acccaactgg agaccccgat tccgctacta 180
ccattggtaa gtctgcttct tttattcttt ttactcacgt ttggagagaa cccatctttg 240
aactagaaaa ctagg 255

<210> 101
<211> 251
<212> DNA
<213> Homo sapiens

<400> 101
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tcttctgggt attatgcat tgtagccatg gtaatagctg gtatgatcta caagtacatt 180
gaataccaag ggtgagtgtg gatttaatct tgatcactgc taaaagtagc aagactagct 240
agtttggtta g 251

<210> 102
<211> 313
<212> DNA

<213> Homo sapiens

<400> 102

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gtgatgggtat ccgtgggctg tccctcagtg cagcccgggt tgctttgctt cgattggagg 180
aaggacctcc acacactaaa aactggaggt aaagaaatca acactagcag tatttggcac 240
atggttaaca cacaacaaat atgtgttttg ttgattttag gataaggaaa ccatatgtgg 300
ctcaaggaat tgg 313

<210> 103

<211> 305

<212> DNA

<213> Homo sapiens

<400> 103

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tcaagcatcc tcgcctcctc acctttgcct cacagctcaa agcaggaaaa ggtctcacta 180
ttgtgggctc tgtcatcgtg gggaacttcc tagagaacta cggatgaagct ttagctgctg 240
agcaggtaag agtcaggctt ttgaggtatt ggaactcagt ttacagcttt gtgatgttaa 300
gtagt 305

<210> 104

<211> 323

<212> DNA

<213> Homo sapiens

<400> 104

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cgccaagctg agagagggca tttcccacct catccagtca tgtggccttg ggggcatgaa 180
gcacaacacg gtggtgatgg gctggcctaa tggctggcgt caaagcgaag atgcccgcgc 240
ttggaagact tttattggta ctaaccattt ctcatacaaa cctaaaggcc caagtcgagg 300
gtatatagtt aatgtctgtc acc 323

<210> 105

<211> 312

<212> DNA

<213> Homo sapiens

<400> 105

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attgatgtgt ggtggattgt gcatgatggg gggatgctta tgctactacc attcctactg 240
aaacagcaca aggtatttta tacaactttt tttttacaaa agtctttctc ctttctgtcc 300
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<210> 106

<211> 335

<212> DNA

<213> Homo sapiens

<400> 106

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catacggatc ttcacagtag cccaattaga agacaacagt atccaaatga agaaggacct 180
agccaccttc ctatatcact tacgcattga ggcggaggta gaagtggtag agatggtag 240
aaagctgagt ttgagatata agaggttcat tccccattc ctctccctgt cttccttgaa 300
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<210> 107

<211> 235

<212> DNA

<213> Homo sapiens

<400> 107

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gatgcttcgg cacatgcggc tatccaaaac agagcgagac agagaggtga gacattactg 180
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<210> 108

<211> 335

<212> DNA

<213> Homo sapiens

<400> 108

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 gacttggaca aaagacaagt acatggcatc ccggggacaa aaagcgaagt caatggaagg 240
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<210> 109
 <211> 274
 <212> DNA
 <213> Homo sapiens

<400> 109
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 caacgaggtt atagttaaca agtcccatga agcaaagctg gttttattga atatgccagg 180
 gccaccccga aaccctgagg gtgatgaaaa ctgtatcctt tccaagagtg gggcttccag 240
 tagggaaaat ctccttaacc tctttctgag ataa 274

<210> 110
 <211> 807
 <212> DNA
 <213> Homo sapiens

<400> 110
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 gtgcttgacc tgttttctta aaaggcctac gtctccatg gaagtgccag ctcattracta 240
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 aagaatttat ggtcaagtat atttgacatc attatcctcg gcaagccaag atgcaaact 660

tttttagcta tatttcttta gtatacccac tgctgtaatt ttatattagg atactaactt 720
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atccaaaaaa aaaaaaaaaa aaaaaaa 807

<210> 111
<211> 3422
<212> DNA
<213> Homo sapiens

<220>
<221>
<222>
<223> n=a, c, g, or t

<400> 111
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<210> 112
 <211> 2290
 <212> DNA
 <213> *Xenopus laevis*

<220>
 <221>
 <222>
 <223> n=a, c, g, or t

<400> 112
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<210> 113

<211> 361

<212> PRT

<213> *Xenopus laevis*

<400> 113

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | His | Glu | Gly | Thr | Val | Leu | Leu | Gly | Asp | Tyr | Leu | Asp | Ser | His | Ala |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Glu | Ser | Gln | Ala | Ala | Glu | Gln | Ala | Leu | Lys | His | Leu | Met | Glu | Gln | Glu |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Lys | Val | Lys | Gly | Phe | Cys | Gln | Val | Val | Val | Ala | Gln | Lys | Leu | Lys | Glu |
| | | 35 | | | | | 40 | | | | | 45 | | | |
| Gly | Leu | Ser | His | Leu | Ile | Gln | Ser | Cys | Gly | Leu | Gly | Gly | Met | Arg | His |
| | 50 | | | | | 55 | | | | | 60 | | | | |
| Asn | Thr | Val | Ile | Met | Ser | Trp | Pro | Ser | Ser | Trp | Arg | Gln | Ser | Asp | Asp |
| | 65 | | | | | 70 | | | | 75 | | | | 80 | |
| Ser | Arg | Ala | Trp | Lys | Ser | Phe | Ile | Thr | Thr | Ile | Arg | Val | Thr | Thr | Ala |
| | | | | 85 | | | | | 90 | | | | | 95 | |
| Ala | Arg | Gln | Ala | Leu | Leu | Val | Ala | Lys | Asn | Val | Ser | Phe | Phe | Pro | Gly |
| | | | 100 | | | | | 105 | | | | | 110 | | |
| Ser | Arg | Glu | Thr | Leu | Ala | Glu | Gly | His | Ile | Asp | Val | Trp | Trp | Ile | Val |
| | | 115 | | | | | 120 | | | | | 125 | | | |
| His | Asp | Gly | Gly | Met | Leu | Met | Leu | Leu | Pro | Phe | Leu | Leu | Lys | Gln | His |
| | 130 | | | | | 135 | | | | | 140 | | | | |
| Lys | Val | Trp | Arg | Lys | Cys | Lys | Met | Arg | Ile | Phe | Thr | Val | Ala | Gln | Met |
| | 145 | | | | 150 | | | | | 155 | | | | | 160 |
| Glu | Asp | Asn | Ser | Ile | Gln | Met | Lys | Lys | Asp | Leu | Ala | Thr | Phe | Leu | Tyr |
| | | | | 165 | | | | | 170 | | | | | 175 | |
| His | Leu | Arg | Ile | Ala | Ala | Asp | Val | Glu | Val | Val | Glu | Met | His | Asp | Ser |
| | | | 180 | | | | | 185 | | | | | 190 | | |
| Asp | Ile | Ser | Ala | Tyr | Thr | Tyr | Glu | Arg | Thr | Leu | Met | Met | Glu | Gln | Arg |
| | | 195 | | | | | 200 | | | | | 205 | | | |
| Ser | Gln | Met | Leu | Arg | Gln | Met | Arg | Leu | Ser | Lys | Thr | Asp | Arg | Glu | Arg |
| | 210 | | | | | 215 | | | | | 220 | | | | |
| Glu | Ala | Gln | Leu | Val | Lys | Asp | Arg | Asn | Ser | Ile | Leu | Arg | Leu | Thr | Ser |
| | 225 | | | | 230 | | | | | 235 | | | | 240 | |
| Val | Gly | Ser | Asp | Asp | Asp | Glu | Asp | Thr | Glu | Ala | Ala | Pro | Glu | Arg | Val |
| | | | 245 | | | | | | 250 | | | | | 255 | |
| His | Met | Thr | Trp | Thr | Arg | Asp | Lys | His | His | Ala | Val | Arg | Val | Ala | Gln |
| | | | 260 | | | | | 265 | | | | | 270 | | |
| Ser | Lys | Pro | Met | Pro | Ser | Cys | Gln | Asp | Leu | Leu | Asn | Ile | Arg | Pro | Asp |
| | | 275 | | | | | 280 | | | | | 285 | | | |

Gln Ser Asn Val Arg Arg Met His Thr Ala Val Lys Leu Asn Glu Val
 290 295 300

Ile Val Asn Lys Ser His Asp Ala Lys Leu Val Leu Leu Asn Met Pro
 305 310 315 320

Gly Pro Pro Arg Asn Pro Gln Gly Asp Glu Asn Tyr Met Glu Phe Leu
 325 330 335

Glu Val Leu Thr Glu Gly Leu Glu Arg Val Leu Val Val Arg Gly Gly
 340 345 350

Gly Thr Glu Val Ile Thr Ile Tyr Ser
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<400> 116

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Asp Glu Tyr

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Ser Pro

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<400> 130
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<210> 131
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a'

